

Access DB# 119420**SEARCH REQUEST FORM**

Scientific and Technical Information Center

Requester's Full Name: King, Tw Examiner #: 77924 Date: 4/14/04  
Art Unit: 1775 Phone Number: 30 Serial Number: 101068506  
Mail Box and Bldg/Room Location: 5060 Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**

\*\*\*\*\*  
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

**STAFF USE ONLY**Searcher: EL

Searcher Phone #: \_\_\_\_\_

Searcher Location: \_\_\_\_\_

Date Searcher Picked Up: \_\_\_\_\_

Date Completed: 4-14-04Searcher Prep & Review Time: 15

Clerical Prep Time: \_\_\_\_\_

Online Time: 115**Type of Search**

NA Sequence (#) \_\_\_\_\_

AA Sequence (#) \_\_\_\_\_

Structure (#) (4)Bibliographic (and)

Litigation \_\_\_\_\_

Fulltext \_\_\_\_\_

Patent Family \_\_\_\_\_

Other \_\_\_\_\_

**Vendors and cost where applicable**STN \$ 708.42Dialog (abstracts)

Questel/Orbit \_\_\_\_\_

Dr. Link \_\_\_\_\_

Lexis/Nexis \_\_\_\_\_

Sequence Systems \_\_\_\_\_

WWW/Internet \_\_\_\_\_

Other (specify) \_\_\_\_\_

=> file reg

FILE 'REGISTRY' ENTERED AT 18:21:30 ON 14 APR 2004  
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=> d his

FILE 'HCAPLUS' ENTERED AT 16:40:55 ON 14 APR 2004

L1 462 S PONG ?/AU  
L2 148 S FLOM ?/AU  
L3 284 S SHIRK ?/AU  
L4 25 S L1 AND L2 AND L3  
L5 265828 S OPTIC?/TI  
L6 67219 S FILTER?/TI  
L7 17 S L4 AND L5  
L8 0 S L4 AND L6  
L9 835507 S OPTIC?  
L10 469914 S FILTER?  
L11 24 S L4 AND L9  
L12 1 S L4 AND L10  
L13 1 S L11 AND L12  
SEL L4 1-25 RN

FILE 'REGISTRY' ENTERED AT 16:43:05 ON 14 APR 2004

L14 80 S E1-E80  
L15 49 S L14 AND N/ELS  
L16 48 S L15 AND RSD/FA  
L17 1 S L15 NOT L16  
E 2,7-DIMETHYL-3,6-DIAZACYCLOHEPTA-1,6-DIENE PERCHLORATE/  
E 2,7-DIMETHYL-3,6-DIAZACYCLOHEPTA-1,6-DIENE/CN  
L18 1644 S ?DIAZACYCLOHEPTA?/CNS  
L19 209117 S ?DIENE?/CNS  
L20 10 S L18 AND L19  
SEL L20 6,7,8 RN  
L21 3 S E1-E3  
EDIT E1-E3 /BI /CRN  
L22 0 S E1-E3  
L23 3 S 110.130.27/RID  
L24 3 S L21 OR L23

FILE 'HCAPLUS' ENTERED AT 16:59:19 ON 14 APR 2004

L25 2 S L24

FILE 'LREGISTRY' ENTERED AT 17:01:57 ON 14 APR 2004

L26 STR 82325-40-4

FILE 'REGISTRY' ENTERED AT 17:08:31 ON 14 APR 2004

L27 22920 S 110.130/RID  
L28 3828 S L27 AND 2/NC  
L29 284 S L28 AND 1/NRS  
E C9H16N2.HI/MF  
L30 2 S E3  
L31 1 S L30 AND L29

FILE 'LREGISTRY' ENTERED AT 17:11:12 ON 14 APR 2004

L32 STR 45845-37-2

FILE 'REGISTRY' ENTERED AT 17:15:30 ON 14 APR 2004

L33 50 S L32  
L34 STR L32  
L35 50 S L34  
L36 STR L34  
L37 6 S L36  
L38 SCR 2040  
L39 50 S L34 AND L38  
L40 57660 S L32 FUL  
L41 4 S L36 SSS SAM SUB=L40  
L42 STR L32  
L43 1 S L42  
L44 4 S L36 SSS SAM SUB=L40  
L45 1059 S L36 SSS FUL SUB=L40  
SAV L45 XU506/A  
L46 3 S L42 AND L38  
L47 STR L42  
L48 0 S L47 AND L38  
L49 0 S L47  
L50 STR  
L51 50 S L50

FILE 'HCAPLUS' ENTERED AT 17:48:37 ON 14 APR 2004

L52 188 S L29  
L53 284 S L45  
L54 469914 S FILTER?  
L55 17281 S (OPTIC? OR FIBEROPTIC? OR REFLECT? OR REFRACT? OR SOLAR  
L56 1550052 S OPTIC? OR FIBEROPTIC? OR REFLECT? OR REFRACT? OR SOLAR?  
L57 3 S L52 AND L55  
L58 6 S L53 AND L55  
L59 12 S L52 AND L54  
L60 9 S L52 AND L56  
L61 7 S L59 AND L6  
L62 17 S L53 AND L54  
L63 9 S L53 AND L56  
L64 7 S L62 AND L63

L65 11 S L57 OR L58 OR L61 OR L64  
L66 18 S (L59 OR L60 OR L62 OR L63) NOT L65  
L67 11161 S CYANINE#(2A)DYE#  
L68 61 S L67 AND L55  
L69 165314 S SOLAR? OR SUN OR SUNS OR SUNSHIN? OR SUNLIGHT?  
L70 0 S L68 AND L69  
L71 5 S L67 AND L54 AND L69  
L72 56 S L68 AND P/DT  
L73 55 S L72 AND (1907-2001/PY OR 1907-2001/PRY)  
L74 5 S L71 NOT L65  
L75 55 S L73 NOT (L65 OR L66 OR L74)

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L76 STR

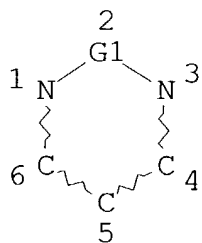
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L77 1 S L76  
L78 SCR 1839  
L79 7 S L76 NOT L78  
L80 SCR 1263  
L81 1 S L76 NOT (L78 OR L80)  
L82 STR L76  
L83 STR  
L84 22 S L82 AND L83 NOT L78  
L85 6 S L82 AND L83  
L86 436 S L82 AND L83 NOT L78 FUL  
SAV L86 XU506A/A

FILE 'HCAPLUS' ENTERED AT 18:12:53 ON 14 APR 2004  
L87 256 S L86  
L88 21 S L87 AND L54  
L89 11 S L87 AND L56  
L90 6 S L88 AND L89  
L91 6 S L87 AND L55  
L92 11 S L90 OR L91 OR L65

FILE 'REGISTRY' ENTERED AT 18:21:30 ON 14 APR 2004

=> d l86 que stat

L78 SCR 1839  
L82 STR



REP G1=(2-5) CH  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RSPEC I  
 NUMBER OF NODES IS 6

STEREO ATTRIBUTES: NONE  
 L83 STR

Hy 1

NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 GGCAT IS MCY UNS AT 1  
 DEFAULT ECLEVEL IS LIMITED  
 ECOUNT IS E2 N AT 1

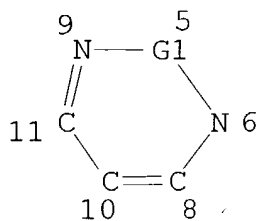
GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 1

STEREO ATTRIBUTES: NONE  
 L86 436 SEA FILE=REGISTRY SSS FUL L82 AND L83 NOT L78

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 SEARCH TIME: 00.00.01

436 ANSWERS

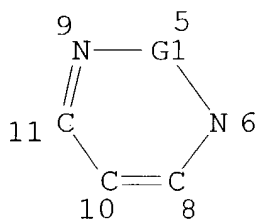
=> d 145 que stat  
 L32 STR



REP G1=(1-5) C  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 6

STEREO ATTRIBUTES: NONE  
 L36 STR



REP G1=(1-5) CH  
 NODE ATTRIBUTES:  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RSPEC I  
 NUMBER OF NODES IS 6

STEREO ATTRIBUTES: NONE  
 L40 57660 SEA FILE=REGISTRY SSS FUL L32  
 L45 1059 SEA FILE=REGISTRY SUB=L40 SSS FUL L36

100.0% PROCESSED 53207 ITERATIONS  
 SEARCH TIME: 00.00.01

1059 ANSWERS

=> file hcaplus

FILE 'HCAPLUS' ENTERED AT 18:22:50 ON 14 APR 2004

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=> d 192 1-11 cbib abs hitstr hitind

L92 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN

2000:347973 Document No. 133:111333 A new **optical**

**filter** for the ARTEMIS experiment. Pomarede, D.; Badran, H. M.; Behr, L.; Boyle, P. J.; Brunetti, M. T.; Fegan, D. J.; Harris, K.; Horan, D.; Plouin, F.; Urban, M.; Weekes, T. C. (LPNHE, Ecole Polytechnique, Palaiseau, 91128, Fr.). Nuclear Instruments & Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment, 446(3), 469-489 (English) 2000. CODEN: NIMAER. ISSN: 0168-9002. Publisher: Elsevier Science B.V..

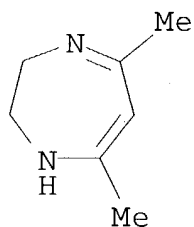
AB The properties of a new liq. **filter** for the ARTEMIS expt. are reported. ARTEMIS, which is run at the Whipple Gamma-Ray/Cosmic-Ray Telescope, aims to measure the neg. charged component of hadronic cosmic rays (presumably antiprotons) in the 1 TeV region. The Earth-Moon system is used as a spectrometer to perform a magnetic anal. of cosmic rays passing close to the Moon. The Moon acts as an aperture stop, resulting in a deficit of both protons and antiprotons. Air showers are detected using Cherenkov light emitted in the UV range to benefit from the large moonlight absorption through ozone in the upper atm. The liq. UV **filter** needed to complement the ozone effect was added to with a recently discovered dye. The authors report here on observations made using this dye. A background redn. to only 3% of its value without the dye was achieved while maintaining the signal amplitude to at least 75% of its level. The reduced sensitivity to moonlight permits a lowering of the trigger threshold which, in turn, increases the air shower registration efficiency by a factor of 3.

IT 3187-88-0

(new **optical filter** for ARTEMIS expt. using)

RN 3187-88-0 HCAPLUS

CN 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl- (6CI, 7CI, 8CI, 9CI)  
(CA INDEX NAME)



- CC 71-7 (Nuclear Technology)  
Section cross-reference(s): 73
- ST **optical filter** ARTEMIS expt neg charged hadronic  
cosmic ray
- IT **Optical filters**  
(liq.; for ARTEMIS expt.)
- IT Hadrons  
(neg charged component; new **optical filter**  
for ARTEMIS expt.)
- IT Extensive air showers (cosmic ray)  
(new **optical filter** for ARTEMIS expt.)
- IT Cherenkov radiation  
(new **optical filter** for ARTEMIS expt. using)
- IT Cosmic ray  
(particles, hadronic, neg. charged component; new **optical filter** for ARTEMIS expt.)
- IT **3187-88-0** 7786-81-4, Nickel sulfate 10124-43-3, Cobalt  
sulfate  
(new **optical filter** for ARTEMIS expt. using)
- L92 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN
- 1997:119664 Document No. 126:231257 Development of a **filter**  
for operation of atmospheric Cherenkov telescopes close to the moon.  
Badran, H. M.; Urban, M.; Weekes, T. C. (Whipple Observatory,  
Harvard-Smithsonian, Amado, AZ, 85645-0097, USA). Nuclear  
Instruments & Methods in Physics Research, Section A: Accelerators,  
Spectrometers, Detectors, and Associated Equipment, 385(2), 258-264  
(English) 1997. CODEN: NIMAER. ISSN: 0168-9002. Publisher:  
Elsevier.
- AB A **filter** has been developed and tested for the ARTEMIS  
expt. with **solar-blind** photomultiplier tubes. The  
**filter** consists of CoSO<sub>4</sub>, NiSO<sub>4</sub>, and 2,7-dimethyl-3,6-  
diazacyclohepta-2,6-diene perchlorate solns. in water. The  
**filter** transmission is about 65% in the wavelength range  
230-270 nm. The Ni-Co soln. allows a factor of 10 redn. in the  
background light from the Moon and the dye introduces another factor  
of 20. This redn. reduces significantly the systematics due to the  
position of the Moon. The new arrangement allows the center of the



camera to be close as 2° from the Moon center without any bias to a specific direction from the moon at any phase.

IT 7300-56-3

(dye; **optical filter** development and testing for the ARTEMIS expt. with **solar-blind** photomultiplier tubes)

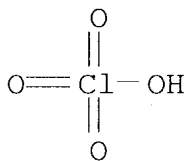
RN 7300-56-3 HCAPLUS

CN 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-, monoperchlorate (8CI, 9CI) (CA INDEX NAME)

CM 1

CRN 7601-90-3

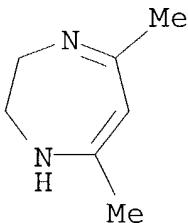
CMF Cl H O4



CM 2

CRN 3187-88-0

CMF C7 H12 N2



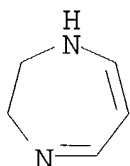
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 70, 71

ST **solar blind** photomultiplier tube ARTEMIS expt;  
**optical filter** atm Cherenkov telescope ARTEMIS;  
radiation detector ARTEMIS Cherenkov telescope **filter**;  
telescopic radiation detector ARTEMIS Cherenkov **filter**; UV  
camera **filter** ARTEMIS expt; cosmic gamma atm Cherenkov  
telescope ARTEMIS

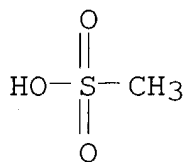
- IT Cameras  
     **Optical filters**  
     (UV; **optical filter** development and testing  
     for the ARTEMIS expt. with **solar-blind** photomultiplier  
     tubes)
- IT Cherenkov radiation  
     Cherenkov radiation detectors  
     Cosmic gamma ray  
     Cosmic gamma ray detectors  
     Cosmic gamma ray detectors  
     Moon  
     Photomultipliers  
     UV and visible spectra  
     (**optical filter** development and testing for  
     the ARTEMIS expt. with **solar-blind** photomultiplier  
     tubes)
- IT Cosmic ray  
     (particles; **optical filter** development and  
     testing for the ARTEMIS expt. with **solar-blind**  
     photomultiplier tubes)
- IT Gamma ray detectors  
     (telescope; **optical filter** development and  
     testing for the ARTEMIS expt. with **solar-blind**  
     photomultiplier tubes)
- IT **7300-56-3**  
     (dye; **optical filter** development and testing  
     for the ARTEMIS expt. with **solar-blind** photomultiplier  
     tubes)
- IT 10026-24-1, Cobalt sulfate (CoSO<sub>4</sub>) heptahydrate 10101-97-0, Nickel  
     sulfate (NiSO<sub>4</sub>) hexahydrate  
     (**optical filter** development and testing for  
     the ARTEMIS expt. with **solar-blind** photomultiplier  
     tubes)
- L92 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN  
     1992:59745 Document No. 116:59745 Light-stable **filter**  
     solutions for the photoisomerization of steroid 5,7-denes.  
     Reichenbaecher, Manfred; Hopf, Gert; Gliesing, Sabine; Schoenecker,  
     Bruno; Kemka, Ulrich (Friedrich-Schiller-Universitaet, Germany).  
     Ger. (East) DD 293578 A5 19910905, 6 pp. (German). CODEN: GEXXA8.  
     APPLICATION: DD 1986-286739 19860204.
- AB The title **filter** soln. consists of a trimethinecyanine  
     dye, an anilide, benzoic acid, or Ph ether, and a metal salt. Thus,  
     7-dehydrocholesterol was photolyzed through a **filter**  
     contg. dimethyldiazacycloheptadiene tetrafluoroborate and PhOMe in  
     EtOH and a second **filter** contg. aq. CuSO<sub>4</sub> to give 73%  
     previtamin D<sub>3</sub>. The **filter** solns. were stable for 5  
     repeats.

IT 134878-28-7  
 (light-stable **filter** soln. for photochem. isomerization  
 contg.)  
 RN 134878-28-7 HCAPLUS  
 CN 1H-1,4-Diazepine, 2,3-dihydro-5,6-(5,7 or 6,7)-dimethyl-,  
 monomethanesulfonate (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 126038-68-4  
 CMF C7 H12 N2  
 CCI IDS



2 ( D1-Me )

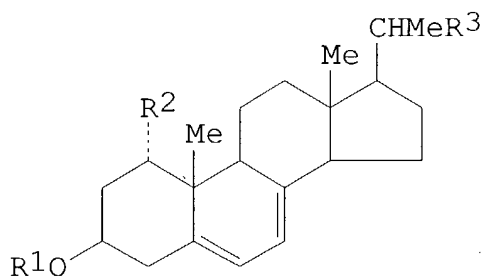
CM 2  
 CRN 75-75-2  
 CMF C H4 O3 S



IC ICM C07C401-00  
 ICS B01J019-08; G02B005-24  
 CC 32-7 (Steroids)  
 Section cross-reference(s): 74  
 ST dehydrocholesterol photochem isomerization **filter**;  
 previtamin D3 photochem prepn **filter**  
 IT Isomerization  
 (photochem., of dehydrocholesterol, light-stable **filter**  
 solns. for)

- IT 100-66-3, Anisole, reactions 103-84-4, Acetanilide 7758-98-7,  
Copper sulfate, reactions 126038-69-5 **134878-28-7**  
(light-stable **filter** soln. for photochem. isomerization  
contg.)
- IT 434-16-2, 7-Dehydrocholesterol  
(photochem. isomerization of, light-stable **filter**  
solns. for)
- IT 1173-13-3P, Previtamin D3  
(prepn. of, by photochem. isomerization, light stable  
**filter** solns. for)
- L92 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN  
1991:450095 Document No. 115:50095 **Filter** solutions for  
photolysis of steroid-5,7-dienes. Reichenbaecher, Manfred; Fassler,  
Dieter; Hopf, Gert; Dliesing, Sabine; Schoenekker, Bruno  
(Friedrich-Schiller-Universitaet, Germany). Ger. (East) DD 286362  
A5 19910124, 6 pp. (German). CODEN: GEXXA8. APPLICATION: DD  
1985-278564 19850715.

GI



- AB Steroid dienes I (R1 = H, alkyl, acyl, trialkylsilyl; R2, R4, R5 = H, OH, acyloxy, alkoxy, trialkylsilyloxy; R3 = CH:CHCHMeCHMe2, CH2CH2CHR4CMe2R5; R4R5 = OCMe2O) were subjected to photolysis in the presence of R6NHCR&:CR8CR9:N+H10 X- and R12C6H4R13 [R6, R10 = alkyl, aryl, (CH2)nR11; R6R10 = alkylene; R7, R9 = H, alkyl, alkoxy, aryl; R8 = H, alkyl, aryl; R11 = aryl; R12 = H, alkyl, OH, CO2H; R13 = CO2H, OH; X- = halide, ClO4-, NO3-, etc.; n = 1-6] as wavelength **filters**. Thus, 7-dehydrocholesterol was subjected to photolysis with a Hg lamp using an aq. soln. of dimethyldiazaheptadiene tetrafluoroborate and resorcinol as **filter** to give an isomeric mixt. comprising 78% previtamin D3.
- IT **126038-69-5 134878-28-7**  
(wavelength **filter**, for photolysis of  
dehydrocholesterol)
- RN 126038-69-5 HCAPLUS

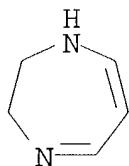
CN 1H-1,4-Diazepine, 2,3-dihydro-5,6-(5,7 or 6,7)-dimethyl-,  
mono[tetrafluoroborate(1-)] (9CI) (CA INDEX NAME)

CM 1

CRN 126038-68-4

CMF C7 H12 N2

CCI IDS



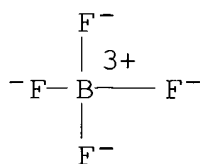
2 ( D1-Me )

CM 2

CRN 16872-11-0

CMF B F4 . H

CCI CCS



● H<sup>+</sup>

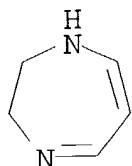
RN 134878-28-7 HCAPLUS

CN 1H-1,4-Diazepine, 2,3-dihydro-5,6-(5,7 or 6,7)-dimethyl-,  
monomethanesulfonate (9CI) (CA INDEX NAME)

CM 1

CRN 126038-68-4

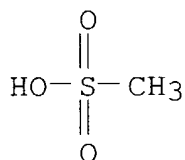
CMF C7 H12 N2  
CCI IDS



2 ( D1-Me )

CM 2

CRN 75-75-2  
CMF C H4 O3 S

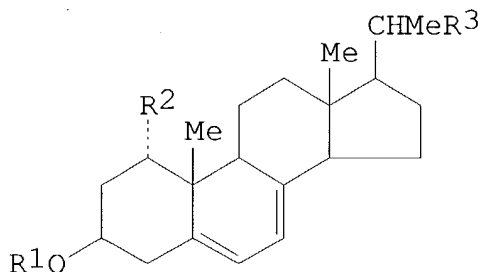


IC C07J401-00  
CC 32-7 (Steroids)  
ST steroid diene photolysis wavelength **filter; filter**  
**optical** steroid diene photolysis  
IT **Optical filters**  
(diazaalkadienes as, for photolysis of diunsatd. steroids)  
IT Photolysis  
(of dehydrocholesterol, wavelength **filters** for,  
diazaalkadienes as)  
IT Steroids, reactions  
(5,7-diunsatd., photoisomerization of, diazaalkadienes as  
wavelength **filters** for)  
IT 434-16-2, 7-Dehydrocholesterol  
(photolysis of, diazaalkadiene wavelength **filters** for)  
IT 1173-13-3P, Previtamin D3  
(prepn. of, by photolysis of dehydrocholesterol, wavelength  
**filters** for)  
IT 108-46-3, 1,3-Benzenediol, reactions 25154-55-6, Nitrophenol  
126038-69-5 134878-28-7

(wavelength **filter**, for photolysis of dehydrocholesterol)

L92 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN  
1991:450094 Document No. 115:50094 **Filter** solutions for photolysis of steroid 5,7-dienes. Reichenbaecher, Manfred; Fassler, Dieter; Hopf, Gert; Gliesing, Sabine; Schoenecker, Bruno (Friedrich-Schiller-Universitaet, Germany). Ger. (East) DD 286353 A5 19910124, 5 pp. (German). CODEN: GEXXA8. APPLICATION: DD 1985-277830 19850627.

GI



AB Steroid dienes I (R1 = H, alkyl, acyl, trialkylsilyl; R2 = H, OH, acyloxy, alkoxy, trialkylsilyloxy; R3 = CH:CHCHMeCHMe2, CH2CH2CHR4CMe2R5; R4,R5 = groups cited for R2) were photolized in the presence of R6NHCR7:CR8CR9:N+HR10 X- and R12C6H4R13 [R6, R10 = alkyl, aryl, (CH2)nR11; R6R10 = alkylene R7, R9 = H, alkyl, alkoxy, aryl; R8 = H, alkyl, aryl; R11 = aryl; R12 = H, alkyl; R13 = NHCOR9, YR8; R8,R9 = alkyl, aryl; Y = O, S; X = halide, ClO4-, NO3-, etc.; n = 1-6] as wavelength **filters**. Thus, 7-dehydrocholesterol was photolized with a Hg lamp using an aq. soln. of dimethyldiazaheptadiene tetrafluoroborate and acetanilide as **filter** to give an isomeric mixt. comprising 78% previtamin D3.

IT 126038-69-5  
(wavelength **filter**, for photolysis of dehydrocholesterol)

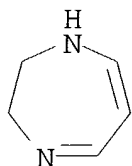
RN 126038-69-5 HCAPLUS  
CN 1H-1,4-Diazepine, 2,3-dihydro-5,6-(5,7 or 6,7)-dimethyl-, mono[tetrafluoroborate(1-)] (9CI) (CA INDEX NAME)

CM 1

CRN 126038-68-4

CMF C7 H12 N2

CCI IDS



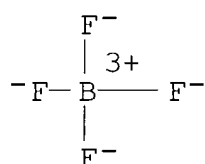
2 ( D1-Me )

CM 2

CRN 16872-11-0

CMF B F4 . H

CCI CCS



● H<sup>+</sup>

IC ICM C07C401-00  
 CC 32-7 (Steroids)  
 ST steroid diene photolysis wavelength **filter**; **filter**  
**optical** photolysis steroid diene  
 IT **Optical filters**  
 (diazaalkadiene derivs. as for photolysis of diunsatd. steroids)  
 IT Photolysis  
 (of dehydrocholesterol, wavelength **filters** for,  
 diazaalkadienes as)  
 IT Steroids, reactions  
 (5,7-diunsatd., photolysis of, diazaalkadienes as wavelength  
**filters** for)  
 IT 434-16-2, 7-Dehydrocholesterol  
 (photolysis of, diazaalkadiene wavelength **filters** for)  
 IT 1173-13-3P, Previtamin D3



(prepn. of, by photolysis of dehydrocholesterol, diazaalkadiene wavelength **filters** for)

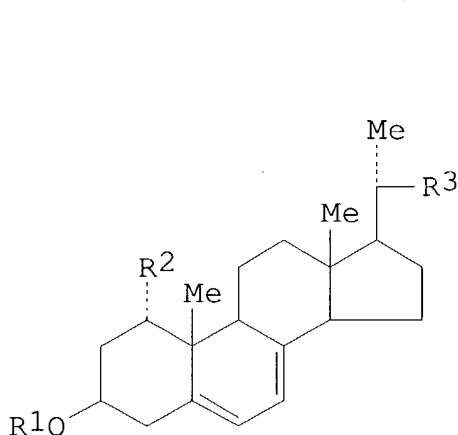
IT 103-84-4, Acetanilide **126038-69-5**

(wavelength **filter**, for photolysis of dehydrocholesterol)

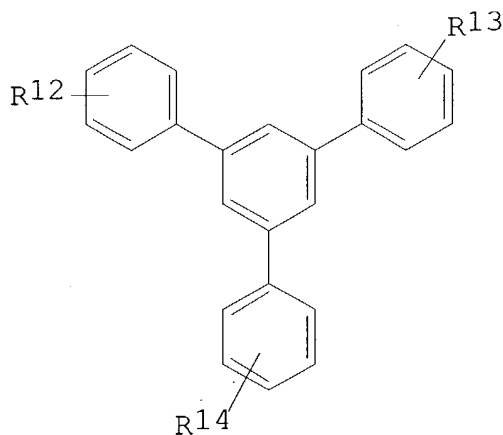
L92 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN

1990:158733 Document No. 112:158733 **Filter** solutions for improved photoisomerization of 5,7-dienesteroids. Reichenbaecher, Manfred; Hopf, Gert; Gliesing, Sabine (Friedrich-Schiller-Universitaet, Ger. Dem. Rep.). Ger. (East) DD 271515 A1 19890906, 5 pp. (German). CODEN: GEXXA8. APPLICATION: DD 1987-300103 19870223.

GI



I



II

AB 5,7-Dienesteroids (I; R1 = H, alkyl, acyl, trialkylsilyl; R2, R4, R5 = H, OH, acyloxy, alkoxy, trialkylsiloxy; R3 = CH:CHCHMe2, CH2CH2CHR4CMe2R5) were photoisomerized using **filters** comprising solns. of R9NHCR6:CR7CR8:NH+R10 X- or R11(CH2)nNHCR6:CR2CR3:N+H(CH2)nR11 X- (R6, R8 = H, alkyl, alkoxy, aryl; R7 = H, alkyl, aryl; R9, R10 = arylalkyl; R9R10 = alkylene; R11 = aryl; n = 1-6; X = halo, ClO4, NO3, SO4, MeSO3, etc.) and triphenylbenzene II (R12, R13, R14 = H, alkyl) in alcs or aq. alcs. at 0.001-1 g/L. Thus, 7-dehydrocholesterol in EtOH at 0° was irradiated with a high pressure Hg lamp through a **filter** soln. comprising 100 mg/L 1,3,5-triphenylbenzene and 95 mg/L dimethyldiazacycloheptadiene tetrafluoroborate (12% transmittance at 296 nm) to give 75% conversion to previtamin D3 after 25 min.

IT **126038-69-5**

(triphenylbenzene and, in **filter** soln., for  
photoisomerization of dehydrocholesterol)

RN 126038-69-5 HCAPLUS

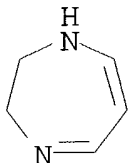
CN 1H-1,4-Diazepine, 2,3-dihydro-5,6-(5,7 or 6,7)-dimethyl-,  
mono[tetrafluoroborate(1-)] (9CI) (CA INDEX NAME)

CM 1

CRN 126038-68-4

CMF C7 H12 N2

CCI IDS



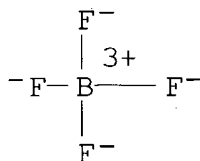
2 ( D1-Me )

CM 2

CRN 16872-11-0

CMF B F4 . H

CCI CCS



● H<sup>+</sup>

IC ICM C07C172-00

CC 32-7 (Steroids)

ST dehydrocholesterol photoisomerization liq **filter**;  
previtamin D3 prepn dehydrocholesterol photoisomerization;

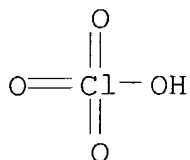
triphenylbenzene dimethyldiazacycloheptadiene soln **optical filter**

- IT Isomerization  
(photochem., of 5,7-diene-steroids, **filter** solns. for)
- IT 612-71-5  
(dimethyldiazacycloheptadiene tetrafluoroborate and, in **filter** soln., for photoisomerization for dehydrocholesterol)
- IT 434-16-2, 7-Dehydrocholesterol  
(photoisomerization of, **filter** soln. for)
- IT 1173-13-3P, Previtamin D3  
(prepn. of, via photoisomerization of dehydrocholesterol, **filter** soln. for)
- IT 126038-69-5  
(triphenylbenzene and, in **filter** soln., for photoisomerization of dehydrocholesterol)
- L92 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN  
1982:94809 Document No. 96:94809 Liquid bandpass **filters**.  
(International Standard Electric Corp., USA). Neth. Appl. NL 8100790 A 19811001, 7 pp. (Dutch). CODEN: NAXXAN. APPLICATION: NL 1981-790 19810218. PRIORITY: US 1980-125431 19800228.
- AB A soln. of 2,7-dimethyldiaza-3,6-cycloheptadiene-1,6-perchlorate (I) is a superior UV **filter** over a polyvinylalc. film contg. I<sub>u</sub>S. (Barr **filter**). Solns. of I in glycerol (0.1-2.0 g per L) <sup>4,329,261</sup> in an **optical** cell are suitable.
- IT 7300-56-3  
(in liq. UV **filters**)
- RN 7300-56-3 HCAPLUS
- CN 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-, monoperchlorate (8CI, 9CI) (CA INDEX NAME)

CM 1

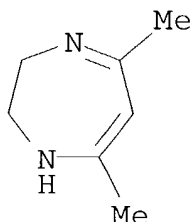
CRN 7601-90-3

CMF Cl H O4



CM 2

CRN 3187-88-0  
CMF C7 H12 N2



- IC G02B001-06; G02B005-24  
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
ST liq bandpass **filter** UV; methyldiazacycloheptadiene perchlorate **filter**; cycloheptadiene methyldiaza perchlorate **filter**  
IT **Optical filters**  
(UV, liq.)  
IT 7300-56-3  
(in liq. UV **filters**)  
IT 56-81-5, uses and miscellaneous  
(liq. UV bandpass **filter** solns. contg.)
- L92 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN  
1972:482180 Document No. 77:82180 Sensitizing dye-containing photographic silver halide emulsions. Shiba, Keisuke; Hinata, Masanao; Misu, Hiroshi; Sawahara, Masao (Fuji Photo Film Co., Ltd.). U.S. US 3617295 19711102, 6 pp. (English). CODEN: USXXAM. APPLICATION: US 1968-707478 19680223.
- GI For diagram(s), see printed CA Issue.  
AB Carbocyanine dye-produced fog and spectral sensitivity degradation with time are suppressed without a lowering of the spectral sensitivity by including in the Ag halide emulsion a I compd., where W is N or CH; R and R3 are H, OH, halogen, alkoxyl, aryloxyl, and arylthio; R1 and R2 are aryloxyl or arylthio; and Q is a phenylene, naphthylene, stilbene, or a bibenzyl group. Thus, a Ag(Br,Cl) emulsion spectrally sensitized with II and contg. per 100 g of Ag halide 8 ml of a 0.1% MeOH soln. of III was coated on a support, dried, exposed using an **optical** wedge and a blue **filter** transmitting only light of wavelength <500 nm and a yellow **filter** transmitting light of wavelength >500 nm, and developed for 10 min at 20° with a Metolhydroquinone developer to give a blue sensitivity of 110, a spectral sensitivity (yellow **filter**) of 200, and fog 0.08 vs. the resp. values 100, 141, and 0.15 for a III-free control emulsion.

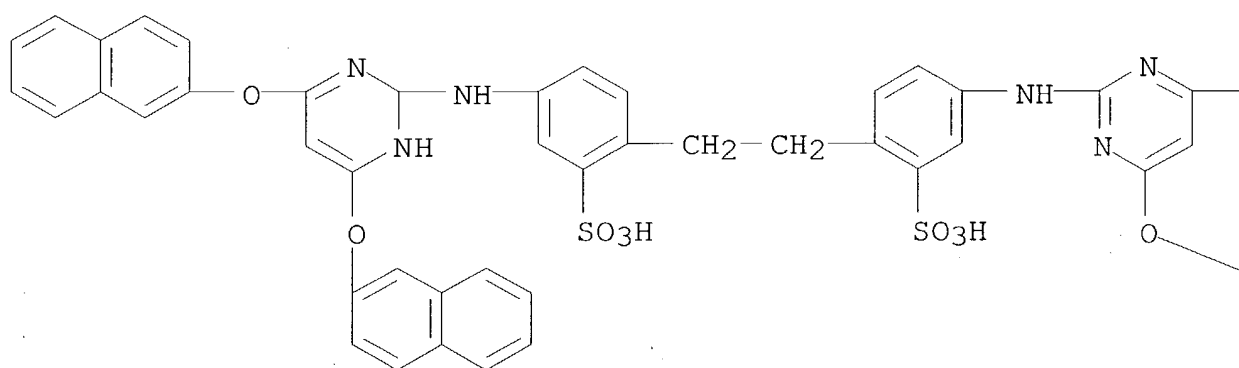
IT 38494-34-7

(photographic stabilizer and fog inhibitor, for carbocyanine dye-sensitized emulsions)

RN 38494-34-7 HCAPLUS

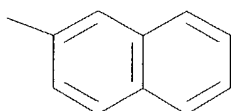
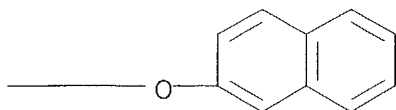
CN Benzenesulfonic acid, 5-[[4,6-bis(2-naphthalenyloxy)-2-pyrimidinyl]amino]-2-[2-[4-[[1,2-dihydro-4,6-bis(2-naphthalenyloxy)-2-pyrimidinyl]amino]-2-sulfohenyl]ethyl]-, disodium salt (9CI) (CA INDEX NAME)

PAGE 1-A



●2 Na

PAGE 1-B



IC G03C

NCL 096126000  
CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)  
IT 28791-60-8 33509-09-0 38494-33-6 **38494-34-7**  
38494-36-9 38494-37-0  
(photographic stabilizer and fog inhibitor, for carbocyanine dye-sensitized emulsions)

L92 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN  
1966:89779 Document No. 64:89779 Original Reference No.  
64:16874h,16875a A band pass **filter** for the 2537-A.  
mercury line. Braga, C. L.; Lumb, M. D. (Univ. Manchester, UK).  
Journal of Scientific Instruments, 43(5), 341-2 (English) 1966.  
CODEN: JSINAY. ISSN: 0368-4253.

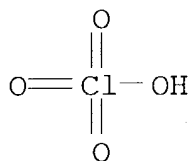
AB An inexpensive liquid **filter** for isolation of the 2537-A.  
Hg line has been developed. This **filter** made possible the  
measurement of the fluorescence emission spectra of benzene and its  
derivs. without interference of the remaining Hg lines.

IT **91774-65-1**, 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-,  
perchlorate  
(in ultraviolet light liquid band pass **filter** (2537A))

RN 91774-65-1 HCAPLUS  
CN 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-, perchlorate (7CI) (CA  
INDEX NAME)

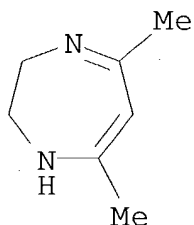
CM 1

CRN 7601-90-3  
CMF Cl H O4

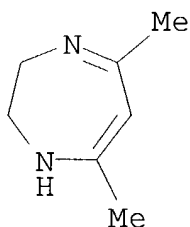


CM 2

CRN 3187-88-0  
CMF C7 H12 N2



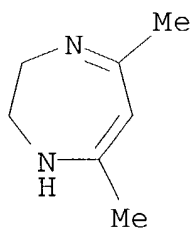
- CC 10 (Spectra and Some Other Optical Properties)  
 IT Light, ultraviolet  
     (**filters**, liquid band-pass, for Hg 2537A line)  
 IT 7786-81-4, Nickel sulfate, NiSO<sub>4</sub> **91774-65-1**,  
 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-, perchlorate  
     (in ultraviolet light liquid band pass **filter** (2537A))  
 IT 10124-43-3, Cobalt sulfate, CoSO<sub>4</sub>  
     (in ultraviolet light liquid band-pass **filter** (2537A))
- L92 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN  
 1965:76033 Document No. 62:76033 Original Reference No. 62:13500f-g  
 An adjustable liquid **filter** for the middle ultraviolet;  
 isolation of the 2804 A line of Hg for detecting proteins in  
 solution. Woodworth, Robert C.; Kravitz, Edward A. (Natl. Inst. of  
 Allergy & Infect. Diseases, Bethesda, MD). Analytical Biochemistry,  
 10(2), 179-83 (English) 1965. CODEN: ANBCA2. ISSN: 0003-2697.
- AB A **filter** system was developed whose wavelength of  
 transmission is adjustable between 2633 and 2905 A. Light  
 transmission was restricted to the middle-uv. by 10 mm. of a 1M aq.  
 NiSO<sub>4</sub> soln. together with a Corning red-purple Corex A  
**filter** No. 986 or a Jena UG5 **filter**. In this  
 region, the transmission max. for aq. solns. of 2,7-dimethyl-3,6-  
 diazacyclohepta-1,6-diene iodide and Na  $\alpha$ -phenazinecarboxylate  
 are 2633 and 2905 A., resp. Any desired transmission max. between  
 these 2 limits may be obtained by mixing appropriate amts. of the 2  
 org. substances.
- IT **1194-19-0**, 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-,  
 hydriodide  
     (in liquid **filter** for middle ultraviolet)
- RN 1194-19-0 HCAPLUS  
 CN 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-, monohydriodide (8CI,  
 9CI) (CA INDEX NAME)



● HI

- CC 60 (Biochemical Methods)  
 IT Spectrophotometers  
     (ultraviolet, **filter** (adjustible liquid) for middle region)  
 IT 1144-02-1, 1-Phenazinecarboxylic acid, sodium salt **1194-19-0**  
     , 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-, hydriodide  
     (in liquid **filter** for middle ultraviolet)
- L92 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2004 ACS on STN  
 1961:122712 Document No. 55:122712 Original Reference No. 55:23051d-e  
 Broad-band ultraviolet **filters**. Childs, Charles B.  
 (Goddard Space Flight Center, Greenbelt, MD). Journal of the  
 Optical Society of America, 51, 895-7 (Unavailable) 1961. CODEN:  
 JOSAAH. ISSN: 0030-3941.
- AB Materials used were interference **filters**, NiSO<sub>4</sub>·6H<sub>2</sub>O,  
 Pb-doped KCl-KBr crystals, Corning 9-54 (96% Si) and 7-54  
 (red-purple Corex A), cation X[2,7-dimethyl-3,6-diazacyclohepta-1,6-  
 diene iodide in poly(vinyl alc.) films]. Effective wave length,  
 transmittance, and band width for the 3 **filters** studied  
 are, resp.: 2680, 2600, 2210 Å.; 0.16, 0.23, 0.10; 320, 200, 330 Å.
- IT **1194-19-0**, 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-,  
 hydriodide  
     (in poly(vinyl alc.) films, ultraviolet **filter** from)
- RN 1194-19-0 HCAPLUS  
 CN 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-, monohydriodide (8CI,  
 9CI) (CA INDEX NAME)





● HI

CC 3 (Electronic Phenomena and Spectra)  
 IT Ultraviolet light  
     (filters, broad-band)  
 IT Glass  
     (ultraviolet **filter** from)  
 IT 9002-89-5, Vinyl alcohol polymers  
     (2,3-dihydro-5,7-dimethyl-1H-1,4-diazepine hydriodide in films  
     of, ultraviolet **filters** from)  
 IT **1194-19-0**, 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-,  
     hydriodide  
     (in poly(vinyl alc.) films, ultraviolet **filter** from)  
 IT 7447-40-7, Potassium chloride  
     (solid solns. of, with KBr, contg. Pb, as **filter** for  
     ultraviolet light)  
 IT 7758-02-3, Potassium bromide  
     (solid solns. with KCl, contg. Pb, as **filter** for  
     ultraviolet light)  
 IT 7439-92-1, Lead  
     (ultraviolet **filter** from KBr-KCl mixt. contg.)  
 IT 7786-81-4, Nickel sulfate, NiSO4  
     (ultraviolet **filter** from hexahydrate of)

=> d his 193-

FILE 'HCAPLUS' ENTERED AT 18:22:50 ON 14 APR 2004

L93 732620 S UV OR U(W)V OR UVA OR UVB OR SUV OR LUV OR ULTRAVIOLET?  
 L94 36 S (L52 OR L53 OR L87) AND L93  
 L95 11 S L94 AND FILT?  
 L96 2 S L95 NOT L92

=> d 196 1-2 cbib abs hitstr hitind

L96 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2004 ACS on STN  
 1965:90895 Document No. 62:90895 Original Reference No.

62:16232d-h,16233a-h Competing ring closures of acylhydrazines. Eilingsfeld, Heinz (Badische Anilin-Soda-Fabrik A.-G., Ludwigshafen, Germany). Chem. Ser., 98(4), 1308-21 (German) 1965. OTHER SOURCES: CASREACT 62:90895.

AB The cyclization of acylthiohydrazides,  $\text{ArCONHNHCSPH}$  (I) to 1,3,4-thiadiazoles or 1,3,4-oxadiazoles and of acylamidrazones to 1,3,4-oxadiazoles or 1,3,4-triazoles was investigated. A versatile method for the prepn. of 2,5-diaryl- and -dialkyl-substituted 1,3,4-thiadiazoles is described.  $\text{BzNHNH}_2$  (13.6 g.), 20 g.  $\text{PhCSOEt}$ , 125 cc.  $\text{Et}_2\text{O}$ , and 75 cc.  $\text{N NaOH}$  stirred 12 hrs. at  $20-30^\circ$  gave 23 g. (crude) I ( $\text{Ar} = \text{Ph}$ ) (II); about 10 g. of crude II in 100 cc.  $\text{H}_2\text{O}$  and 5 cc.  $2\text{N NaOH}$  treated at  $0^\circ$  with stirring with 30% aq.  $\text{NaOH}$  and **filtered**, and the residue dissolved in 100 cc.  $\text{H}_2\text{O}$  and treated with 5 cc.  $\text{C}_5\text{H}_5\text{N}$  yielded 6 g. pure II, m.  $142^\circ$ . Similarly were prepd. I ( $\text{Ar} = \text{p-MeOC}_6\text{H}_4$ ) (III) and I ( $\text{Ar} = \text{p-O}_2\text{NC}_6\text{H}_4$ ) (IIIa). II (1 g.) in 10 cc.  $\text{AcOH}$  heated 1-2 hrs. at  $110^\circ$  and dild. with  $\text{H}_2\text{O}$  yielded 91% IV ( $\text{Ar} = \text{Ph}$ ) (V), Rf 0.63 (93:7  $\text{C}_6\text{H}_6$ -tetrahydrofuran, silica gel thin-layer). III gave similarly 90% IV ( $\text{Ar} = \text{p-MeOC}_6\text{H}_4$ ) (VI), Rf 0.56, and IIIa yielded 93% IV ( $\text{Ar} = \text{p-O}_2\text{NC}_6\text{H}_4$ ) (VII), Rf 0.58 ( $\text{PhNO}_2$ ). II (1 g.) in 8 cc. 1-methylpyrrolidone heated 5 hrs. at  $140^\circ$  and 2 hrs. at  $160^\circ$  gave 89% V and 3% VIII ( $\text{Ar} = \text{Ph}$ ) (IX), Rf 0.46 ( $\text{C}_6\text{H}_6$ -tetrahydrofuran). III gave similarly 81% VI and 8% VIII ( $\text{Ar} = \text{p-MeOC}_6\text{H}_4$ ) (X), Rf 0.33. IIIa yielded similarly 92% VII. II (1 g.) in 8 cc. 1-methylpyrrolidone and 3 g.  $\text{Pr}_3\text{N}$  gave 3% V and 87% IX. III gave similarly 3% VI and 87% X. II (1 g.) in 8 cc. 1-methylpyrrolidone and 3 g.  $\text{PhNMe}_2$  yielded 84% V and 7.5% IX. III gave similarly 80% VI and 10% X, and IIIa yielded 90% VII and 1% VIII ( $\text{Ar} = \text{p-O}_2\text{NC}_6\text{H}_4$ ) (XI), Rf 0.36 ( $\text{PhNO}_2$ ). II (1 g.) in 8 cc.  $\text{BuOCH}_2\text{CH}_2\text{OH}$  heated 3 hrs. at  $135^\circ$  gave 81% V and 9% IX. III gave similarly 79% VI and 11% X, and IIIa yielded 91% VII only. II (1 g.) in 8 cc.  $\text{BuOCH}_2\text{CH}_2\text{OH}$  and 3 g.  $\text{Pr}_3\text{N}$  gave 3% V and 87% IX, and III yielded 0-1% and 87% X. II (1 g.) in 8 cc.  $\text{BuOCH}_2\text{CH}_2\text{OH}$  and 3 g.  $\text{PhNMe}_2$  gave 71% V and 18.5% IX. III yielded similarly 67.5% VI and 22.5% X, and IIIa gave 75% VII and 16% XI. The appropriate Et imidate (0.1 mole) and 0.1 mole acid hydrazide in 120 cc.  $\text{EtOH}$  refluxed 2 hrs. yielded the corresponding  $\text{ArCONHNHC}(:\text{NH})\text{Ph}$  (XII) ( $\text{Ar}$ , m.p., and % yield given): Ph (XIII),  $182^\circ$ , 54;  $\text{p-MeOC}_6\text{H}_4$  (XIV),  $169-71^\circ$ , 49;  $\text{p-O}_2\text{NC}_6\text{H}_4$  (XV),  $239-41^\circ$ , 53. XIII (1 g.) in 20 cc. appropriate solvent heated 3 hrs. at  $115-20^\circ$  and dild. with  $\text{H}_2\text{O}$  gave the corresponding XVI and (or) VIII. XIII in  $\text{CHCl}_2\text{CO}_2\text{H}$  gave only IX. XIV yielded similarly exclusively X. XV gave mostly XI with a small amt. of XVI ( $\text{Ar} = \text{p-MeOC}_6\text{H}_4$ ) (XVII); in  $\text{AcOH}$  mostly XVII with 7-8% XI was obtained. XIII in  $\text{AcOH}$  gave 65% IX and some XVI ( $\text{Ar} = \text{Ph}$ ) (XVIII); in 3:1 and 1:1  $\text{AcOH}$ -1-methylpyrrolidone 46 and 19% IX, resp., with increasing amts. of XVIII, were formed. No IX was obtained from XIII in 1-methylpyrrolidone or  $\text{C}_5\text{H}_5\text{N}$ . XIV in 3:1, 1:1, and 1:3

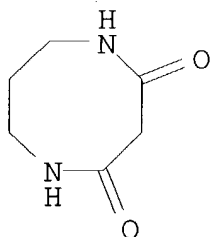
AcOH-1-methylpyrrolidone yielded 64, 42, and 6-7% X with increasing amts. of XVI (Ar = p-MeOC<sub>6</sub>H<sub>4</sub>) (XIX). XIV in 1-methylpyrrolidone or C<sub>5</sub>H<sub>5</sub>N gave exclusively XIX. XV gave similarly in 1-methylpyrrolidone or C<sub>5</sub>H<sub>5</sub>N only XVII. BzNHNHC(:NPh)Ph (3.15 g.) in 15 cc. concd. H<sub>2</sub>SO<sub>4</sub> heated 1 hr. at 30° and poured into 200-300 cc. H<sub>2</sub>O yielded 0.70 g. IX, m. 142°.

p-O<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>CONHN:CHNMe<sub>2</sub> (2.26 g.) in 20 cc. AcOH refluxed 15 min. and dild. with H<sub>2</sub>O gave 1.5 g. 2-(p-nitrophenyl)-1,3,4-oxadiazole, m. 153-5°. PhCSNHNH<sub>2</sub> (XX) (15.2 g.) added slowly to 33 g. 1-amino-4-nitroanthraquinone-2-carboxylic acid chloride (XXI) in 200 cc. 1-methylpyrrolidone at 50-60° and kept 0.5 hr. yielded 32.5 g. red 2-phenyl-5-(1-amino-4-nitro-2-anthraquinonyl)-1,3,4-thiadiazole (XXII), m. 320-2°. XX (15.2 g.) added at 40-50° slowly to 31.5 g. 1-nitro analog of XXI and stirred 10 min. at 40° gave 29 g. 5-(1-nitro-2-anthraquinonyl) analog of XXII, m. 264-7° (decompn.). XX (15.2 g.) and 14.7 g. 2-thenoyl chloride in 30-50 cc. HCONMe<sub>2</sub> yielded 19 g. 2-phenyl-5-(2-thienyl)-1,3,4-thiadiazole (XXIII), m. 125°.

XX (15.2 g.), 17.1 g. p-O<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>COCl, and 50 cc. 1-methylpyrrolidine heated 0.5 hr. at 50-60° gave 25 g. 5-(p-O<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>) analog of XXIII, m. 256-7°. The appropriate I (0.1 mole) in 50-100 cc. AcOH heated 10 min. yielded 74% acylation product and 92% XXIV (R = R' = Ph) (XXV), m. 140-1°, and 78% acylation product and 90% XXIV (R = Ph, R' = p-O<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>), m. 256-7°. 1-Aminoanthraquinone-2-carboxylic acid hydrazide (XXVI) (28 g.), 120 cc. MeOCH<sub>2</sub>CH<sub>2</sub>OH, 500 cc. N NaOH, and 18.7 g. EtCS<sub>2</sub>Et (XXVII) stirred 1 day at 20-5° with a few drops wetting agent and acidified with AcOH yielded 30 g. (crude) N<sub>2</sub>-EtCS deriv. (XXVIII) of XXVI. Crude XXVIII (35.3 g.) in 125 cc. CHCl<sub>2</sub>CO<sub>2</sub>H heated 1 hr. at 120° yielded 33 g. 2-ethyl-5-(1-amino-2-anthraquinonyl)-1,3,4-thiadiazole (XXIX), red, m. 222-3° (MeOCH<sub>2</sub>CH<sub>2</sub>OH). 1,4-Diaminoanthraquinone-2-carboxylic acid hydrazide (XXX) (29.6 g.), 120 cc. MeOCH<sub>2</sub>CH<sub>2</sub>OH, 600 cc. MeOH, and 18.7 g. XXVII stirred 2 days at 20-30° and acidified with AcOH yielded 30 g. N<sub>2</sub>-EtCS<sub>2</sub> deriv. (XXXI) of XXX, R<sub>f</sub> 0.4 (1:5:5:5 CH<sub>2</sub>Cl<sub>2</sub>-dioxane-Me<sub>2</sub>CO-H<sub>2</sub>O; acylated paper) (R<sub>f</sub> XXX 0.58). XXXI (36.8 g.) in 150 cc. AcOH and 20 cc. Ac<sub>2</sub>O refluxed 2 hrs. yielded 35.6 g. 5-(1-amino-4-acetamino-2-anthraquinonyl) analog of XXIX, blue-violet crystals from BuOH. The appropriate thiocarboxylic acid phthalimide (0.1 mole) and 0.1-0.15 mole acid hydrazide in 1-methylpyrrolidone (XXXII) or HCONMe<sub>2</sub> (XXXIII) heated about 30-45 min. at 40-60° treated with 10-15 g. p-MeC<sub>6</sub>H<sub>4</sub>SO<sub>3</sub>H, and heated 10-15 min. at 70-90° yielded the corresponding XXIV (R, R', % yield, and m.p. given): Me, Ph, 62, 102-3°; NCCH<sub>2</sub>, Ph, 60, 115°; Ph, Ph, 94, 140-1°; p-MeOC<sub>6</sub>H<sub>4</sub>, Ph, 83, 143-5°; o-HOC<sub>6</sub>H<sub>4</sub>, Ph, 95, 206-8°; 4-pyridyl, Ph, 89, 181-3°; m-NCC<sub>6</sub>H<sub>4</sub>, Ph, 68, 178°; 1-amino-2-anthraquinonyl, Ph, 70, 308-10°; 1,4-diamino-2-anthraquinonyl, Ph, 68, 277-8°; p-O<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>,

p-ClC<sub>6</sub>H<sub>4</sub>, 88, 242-4°; o-HOC<sub>6</sub>H<sub>4</sub>, p-MeOC<sub>6</sub>H<sub>4</sub>, 70, 187-90°; 2-(5-phenyl-1,3,4-triazol-2-yl)ethyl), Ph, 68, 195-7°. p-C<sub>6</sub>H<sub>4</sub>(CN)<sub>2</sub> (64 g.) in 225 cc. XXXII and 60 g. Pr<sub>3</sub>N treated about 8 hrs. with H<sub>2</sub>S gave 143 g. p-C<sub>6</sub>H<sub>4</sub>(CSNH<sub>2</sub>)<sub>2</sub>.XXXII (XXXIV.XXXII), which washed with MeOH gave XXXIV. XXXIV (19.6 g.) in 80 cc. XXXII and 30 cc. C<sub>5</sub>H<sub>5</sub>N treated dropwise during 1 hr. at 0° with 40.6 g. phthaloyl chloride and stirred 2 hrs. at 100° yielded 39.5 g. N,N'-diphthaloyldithioterephthalic acid diamide (XXXV), violet, m. 300° (decompn.). XXXV (22.8 g.) and 28.1 g. XXVI in 200 cc. XXXII heated 2 hrs. at 40-50°, treated with 20 g. p-MeC<sub>6</sub>H<sub>4</sub>-SO<sub>3</sub>H, and heated 1 hr. at 90° yielded 26 g. red XXXVI which dyes bluish red shades from a blue vat. BzNHN:CHNMe<sub>2</sub> (19 g.) [from 13.5 g. BzNHNH<sub>2</sub> and 16 g. HC(OEt)<sub>2</sub>NMe<sub>2</sub> by heating at 120°] in 90 cc. HCONMe<sub>2</sub> and 5 cc. AcOH treated below 40° with dry H<sub>2</sub>S yielded 15 g. BzNHNHCHS (XXXVII), m. 135-7°. XXXVII (18 g.) in 30 g. CHCl<sub>2</sub>CO<sub>2</sub>H heated 10 min. at 80-90° yielded 10.8 g. 2-phenyl-1,3,4-thiadiazole, m. 45-7°. (BzNH)<sub>2</sub> (6 g.) in 30 cc. o-C<sub>6</sub>H<sub>4</sub>Cl<sub>2</sub> treated at 160° during 0.5 hr. with 6 g. P<sub>2</sub>S<sub>5</sub>, heated 1 hr. at 160°, and poured into 150 cc. H<sub>2</sub>O yielded 4.8-5.4 g. XXV. Similar runs with 10 cc. quinoline, 10 cc. Pr<sub>3</sub>N, or 12 g. P<sub>2</sub>S<sub>5</sub> and 10 cc. Pr<sub>3</sub>N added yielded 32.8, 36.8, and 22.2% XXV, resp.

IT 4345-53-3, 1,5-Diazocine-2,4(1H,3H)-dione, tetrahydro-  
(prepn. of)  
RN 4345-53-3 HCAPLUS  
CN 1,5-Diazocine-2,4(1H,3H)-dione, tetrahydro- (7CI, 8CI, 9CI) (CA  
INDEX NAME)



CC 38 (Heterocyclic Compounds (More Than One Hetero Atom))  
IT Spectra, visible and **ultraviolet**  
(of 1,2,5-thiadiazole derivs.)  
IT 725-12-2, 1,3,4-Oxadiazole, 2,5-diphenyl- 842-79-5,  
1,3,4-Oxadiazole, 2-(p-methoxyphenyl)-5-phenyl- 1037-05-4,  
2-Isioxazoline, 5-(2-naphthyl)-3-phenyl- 1090-82-0,  
1,3,4-Oxadiazole, 2-(p-nitrophenyl)-5-phenyl- 1456-21-9,  
1,3,4-Thiadiazole, 2,5-diphenyl- 1456-67-3, 1,3,4-Thiadiazole,  
2-(p-methoxyphenyl)-5-phenyl- 1456-68-4, 1,3,4-Thiadiazole,

2-(p-nitrophenyl)-5-phenyl- 1456-72-0, 1,3,4-Thiadiazole,  
 2-methyl-5-phenyl- 1456-73-1, 1,3,4-Thiadiazole,  
 2-phenyl-5-(2-thienyl)- 1456-74-2, Anthraquinone,  
 1-amino-4-nitro-2-(5-phenyl-1,3,4-thiadiazol-2-yl)- 2039-06-7,  
 s-Triazole, 3,5-diphenyl- 4057-66-3, s-Triazole,  
 3-(p-nitrophenyl)-5-phenyl- 4057-67-4, Hydrazine,  
 1-benzimidoyl-2-(p-nitrobenzoyl)- 4057-68-5, Hydrazine,  
 1-benzimidoyl-2-benzoyl- 4057-69-6, Hydrazine,  
 1-p-anisoyl-2-benzimidoyl- 4156-04-1, s-Triazole,  
 3-(p-methoxyphenyl)-5-phenyl- 4291-06-9, Benzonitrile,  
 m-(5-phenyl-1,3,4-thiadiazol-2-yl)- 4291-07-0, Pyridine,  
 4-(5-phenyl-1,3,4-thiadiazol-2-yl)- 4291-08-1, Phenol,  
 o-(5-phenyl-1,3,4-thiadiazol-2-yl)- 4291-10-5, Anthraquinone,  
 1-amino-2-(5-ethyl-1,3,4-thiadiazol-2-yl)- 4291-12-7,  
 Anthraquinone, 1-nitro-2-(5-phenyl-1,3,4-thiadiazol-2-yl)-  
 4291-13-8, 1,3,4-Oxadiazole, 2-(p-nitrophenyl)- 4291-14-9,  
 1,3,4-Thiadiazole, 2-phenyl- 4291-15-0, Phthalimide,  
 N,N'-(dithioterephthaloyl)di- 4291-16-1, Hydrazine,  
 1-benzoyl-2-(thioformyl)- 4291-17-2, Phenol, o-[5-(p-  
 methoxyphenyl)-1,3,4-thiadiazol-2-yl]- 4291-18-3, Anthraquinone,  
 1,4-diamino-2-(5-phenyl-1,3,4-thiadiazol-2-yl)- 4309-99-3,  
 Anthraquinone, 4-acetamido-1-amino-2-(5-ethyl-1,3,4-thiadiazol-2-yl)-  
 4310-01-4, 1,3,4-Thiadiazole, 2,2'-ethylenebis[5-phenyl-  
 4310-02-5, 1,3,4-Thiadiazole, 2-(p-chlorophenyl-5-(p-nitrophenyl)-  
 4310-03-6, Anthraquinone, 1-amino-2-(5-phenyl-1,3,4-thiadiazol-2-yl)-  
 4345-50-0, 5H-v-Triazolo[4,5-b][1,4]diazocin-5-one,  
 3a,4,6,7,8,9-hexahydro- 4345-51-1, 9H-v-Triazolo[4,5-  
 b][1,5]diazocin-9-one, 4,5,6,7,8,9a-hexahydro- 4345-52-2,  
 1,4-Diazocine-2,5-dione, hexahydro- **4345-53-3**,  
 1,5-Diazocine-2,4(1H,3H)-dione, tetrahydro- 4552-35-6,  
 1,3,4-Thiadiazole-2-acetonitrile, 5-phenyl-  
 (prepn. of)

L96 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2004 ACS on STN

1958:65885 Document No. 52:65885 Original Reference No.

52:11866i,11867a-e Diazepines. II. Some bromination experiments on dihydrodiazepines. Lloyd, Douglas; Marshall, Donald R. Journal of the Chemical Society, Abstracts 118-20 (Unavailable) 1958. CODEN: JCSAAZ. ISSN: 0590-9791.

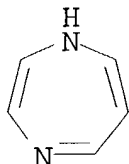
AB cf. C.A. 51, 2819e. Bromination of 2,3-dihydro-1,4-diazepines was studied. One Br atom only enters the mol. by substitution at the 6-position. This Br atom is easily replaced by an MeO or EtO group. 2,3-Dihydro-5,7-dimethyl-2,3-cyclopentano-1,4-diazepine (0.33 g.) in Et<sub>2</sub>O treated with an equimolar quantity of Br gave 0.54 g. 6-bromo-2,3-dihydro-5,7-dimethyl-2,3-cyclopentano-1,4-diazepinium bromide (I), needles, m. 360-70° (decompn.) (H<sub>2</sub>O or alc.). Aq. I gave a halide reaction with AgNO<sub>3</sub>. 2,3-Dihydro-5,7-dimethyl-1,4-diazepine (Ia) (4.3 g.) in Et<sub>2</sub>O similarly brominated gave 5.9 g.

6-bromo-2,3-dihydro-5,7-dimethyl-1,4-diazepinium bromide (II), m. 207-8° (EtOAc-MeOH). II treated in H<sub>2</sub>O with excess NaOH gave 6-bromo-2,3-dihydro-5,7-dimethyl-1,4-diazepine (III), m. 122-3°; perchlorate, m. 161-2° (H<sub>2</sub>O); picrate, m. 207-9°. The HCl salt or perchlorate of the starting material was also readily brominated in CHCl<sub>3</sub> or perchloric acid to give 90% II. Ia perchlorate (2.24 g.) and 2 g. N-bromosuccinimide in CHCl<sub>3</sub> refluxed 2 hrs. gave 61% II perchlorate. III (9 g.) kept 5 days in 2N H<sub>2</sub>SO<sub>4</sub> gave 6 g. lachrymatory oil, sol. in aq. NaOH, contg. Br but no N, intense purple color with FeCl<sub>3</sub>, orange gum with Brady reagent. The residual acid soln. extd. with Et<sub>2</sub>O and made alk. gave a product which shaken with BzCl and p-MeC<sub>6</sub>H<sub>4</sub>SO<sub>2</sub>Cl gave the dibenzoyl (IV), m. 252-3°, and bis-p-toluenesulfonyl derivs., m. 161-2°, of (CH<sub>2</sub>NH<sub>2</sub>)<sub>2</sub>. In another expt. 2 g. III gave 2.4 g. IV. KOH (4 g.) in 30 ml. alc. refluxed 0.5 hr. with 5 g. I or II, kept overnight, 4.08 g. KBr removed, the soln. acidified, **filtered**, and evapd. to dryness, the residue dissolved in 50 ml. 10% NaOH, extd. with Et<sub>2</sub>O, and concd. gave a brown gum which crystd. as 6-ethoxy-2,3-dihydro-5,7-dimethyl-1,4-diazepine (V); picrate, m. 167.5-8.5° (alc.). V picrate was also obtained by refluxing II with alc. alkali and adding picric acid directly. III (6.44 g.) and 2.15 g. KOH in 30 ml. MeOH refluxed 2 min. and the product treated with 10.6 g. picric acid in 60 ml. refluxing MeOH gave 2,3-dihydro-6-methoxy-5,7-dimethyl-1,4-diazepine picrate (VI), m. 157-9°. VI and the V picrate were unchanged when heated with AcOH-Ac<sub>2</sub>O. The **ultraviolet** spectra in MeOH were given for these compds. It was noted that introduction of a Br atom or alkoxy group into the dihydrodiazepines caused little change in the general form of the spectra but there was bathochromic displacement of the main peak, this being consistent with the structures assigned.

IT 292-04-6, 1H-1,4-Diazepine 54462-92-9,  
1H-1,4-Diazepine, 6-bromo-2,3-dihydro-5,7-dimethyl-  
(derivs.)

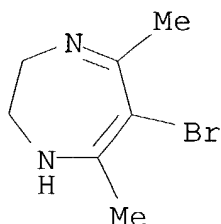
RN 292-04-6 HCAPLUS

CN 1H-1,4-Diazepine (8CI, 9CI) (CA INDEX NAME)

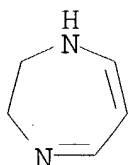


RN 54462-92-9 HCAPLUS

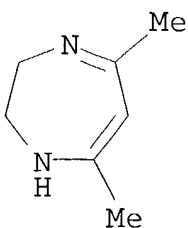
CN 1H-1,4-Diazepine, 6-bromo-2,3-dihydro-5,7-dimethyl- (6CI, 9CI) (CA  
INDEX NAME)



IT 21908-58-7, 1H-1,4-Diazepine, 2,3-dihydro-  
 (derivs., bromination of)  
 RN 21908-58-7 HCAPLUS  
 CN 1H-1,4-Diazepine, 2,3-dihydro- (8CI, 9CI) (CA INDEX NAME)

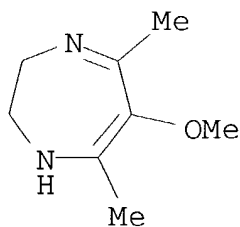


IT 3187-88-0, 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-  
 54462-94-1, 1H-1,4-Diazepine, 2,3-dihydro-6-methoxy-5,7-  
 dimethyl- 54462-95-2, 1H-1,4-Diazepine,  
 6-ethoxy-2,3-dihydro-5,7-dimethyl- 62084-95-1,  
 1H-1,4-Diazepine, 2,3-dihydro-6-methoxy-5,7-dimethyl-, picrate  
 106653-11-6, 1H-1,4-Diazepine, 6-ethoxy-2,3-dihydro-5,7-  
 dimethyl-, picrate  
 (prepn. of)  
 RN 3187-88-0 HCAPLUS  
 CN 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl- (6CI, 7CI, 8CI, 9CI)  
 (CA INDEX NAME)



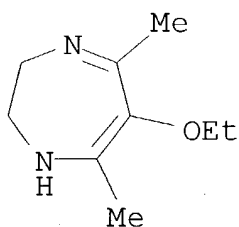
RN 54462-94-1 HCAPLUS  
 CN 1H-1,4-Diazepine, 2,3-dihydro-6-methoxy-5,7-dimethyl- (6CI, 9CI)

(CA INDEX NAME)



RN 54462-95-2 HCAPLUS

CN 1H-1,4-Diazepine, 6-ethoxy-2,3-dihydro-5,7-dimethyl- (6CI, 9CI) (CA INDEX NAME)



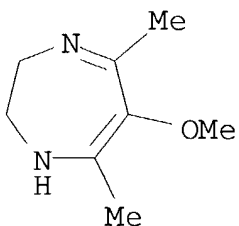
RN 62084-95-1 HCAPLUS

CN 1H-1,4-Diazepine, 2,3-dihydro-6-methoxy-5,7-dimethyl-, compd. with 2,4,6-trinitrophenol (1:1) (9CI) (CA INDEX NAME)

CM 1

CRN 54462-94-1

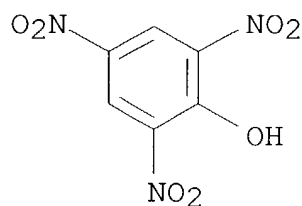
CMF C8 H14 N2 O



CM 2



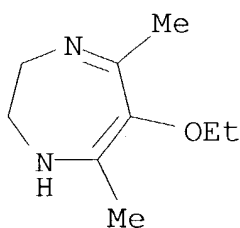
CRN 88-89-1  
CMF C6 H3 N3 O7



RN 106653-11-6 HCAPLUS  
CN 1H-1,4-Diazepine, 6-ethoxy-2,3-dihydro-5,7-dimethyl-, picrate (6CI)  
(CA INDEX NAME)

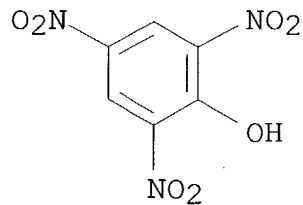
CM 1

CRN 54462-95-2  
CMF C9 H16 N2 O



CM 2

CRN 88-89-1  
CMF C6 H3 N3 O7



CC 10 (Organic Chemistry)  
IT Ultraviolet and visible, spectra

- (of 1H-1,4-diazepine derivs.)
- IT 292-04-6, 1H-1,4-Diazepine 54462-92-9,  
1H-1,4-Diazepine, 6-bromo-2,3-dihydro-5,7-dimethyl-  
(derivs.)
- IT 21908-58-7, 1H-1,4-Diazepine, 2,3-dihydro-  
(derivs., bromination of)
- IT 3187-88-0, 1H-1,4-Diazepine, 2,3-dihydro-5,7-dimethyl-  
46049-62-1, Cyclopenta[b][1,4]diazepine, 1,5a,6,7,8,8a-hexahydro-2,4-  
dimethyl- 54462-94-1, 1H-1,4-Diazepine,  
2,3-dihydro-6-methoxy-5,7-dimethyl- 54462-95-2,  
1H-1,4-Diazepine, 6-ethoxy-2,3-dihydro-5,7-dimethyl-  
62084-95-1, 1H-1,4-Diazepine, 2,3-dihydro-6-methoxy-5,7-  
dimethyl-, picrate 106653-11-6, 1H-1,4-Diazepine,  
6-ethoxy-2,3-dihydro-5,7-dimethyl-, picrate 114306-43-3,  
Cyclopenta[b][1,4]diazepine, 3-bromo-1,5a,6,7,8,8a-hexahydro-2,4-  
dimethyl-, hydrobromide  
(prepn. of)

=> d 166 1-18 ti

- L66 ANSWER 1 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Thermotropic liquid crystalline behavior of piperazinium and  
homopiperazinium alkylsulfates
- L66 ANSWER 2 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI 3,3'-Dimesityl-7-methyl-9a-phenyl-4,4'-5,5',6,8,9,9a-octahydro-7H-  
1,2,4-oxadiazolo[4,5-d][1,4]diazepine-8-spiro-5'-isoxazole
- L66 ANSWER 3 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Crystal structure of 3-hydroxyl-1,5-diazacycloheptane dihydrobromide  
C5H12N2O·2HBr
- L66 ANSWER 4 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Preparation of **optically** active indazole-3-carboxamides  
and antiemetics containing them
- L66 ANSWER 5 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI An investigation of modified silver iodide solid electrolytes  
containing the homopiperazinium cation. II. Electrochemical  
behavior in the N,N,N',N'-tetramethylhomopiperazinium  
diiodide-silver iodide system and application to solid state  
batteries
- L66 ANSWER 6 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Photoisomerization of steroid 5,7-dienes with the use of  
**filter** solutions

- L66 ANSWER 7 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Photochemical isomerization of steroid 5,7-dienes with the use of light-stable **filtering** solutions
- L66 ANSWER 8 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Rearrangement of substituted bicyclo[2.1.1]hex-2-yl mesylates under solvolytic conditions
- L66 ANSWER 9 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Preparation of derivatives of 5- or 7-(o-hydroxyphenyl)-2,3-dihydro-1,4-diazepines as nervous system depressants
- L66 ANSWER 10 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Photochemical electron-transfer reactions of biphenyl-2,2'-dicarboximide and naphthalene-1,8-dicarboximide with olefins. Dependence of the reaction course on the structure of the aromatic imide
- L66 ANSWER 11 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Diazepines. Part 24. Crystal and molecular structure of 2,3-dihydro-5,7-dimethyl-1,4-diazepinium perchlorate
- L66 ANSWER 12 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Anticonvulsant triazine derivatives
- L66 ANSWER 13 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Diaza compounds
- L66 ANSWER 14 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Basic tricyclic diazepine derivatives
- L66 ANSWER 15 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Diazepines. II. Some bromination experiments on dihydrodiazepines
- L66 ANSWER 16 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Chemotherapy of filariasis. Analogs of diethylcarbamazine (1-diethylcarbamoyl-4-methylpiperazine) derived from 2,4'- and 4,4'-dipiperidyl, homopiperazine, and 4-aminopiperidine
- L66 ANSWER 17 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Synthesis of imidazolines, diazepines, triazepines, and imidazolidones from a 1,2-diamine and 1,1-dicarboxylic esters
- L66 ANSWER 18 OF 18 HCAPLUS COPYRIGHT 2004 ACS on STN  
TI Piperidone chemistry. I. Synthesis of 5-homopiperazinones

=> d 174 1-5 cbib abs hitstr hitind

L74 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN

2002:54536 Document No. 136:250225 Photoelectrochemical Properties of J Aggregates of Benzothiazole Merocyanine Dyes on a Nanostructured TiO<sub>2</sub> Film. Sayama, Kazuhiro; Tsukagoshi, Shingo; Hara, Kohjiro; Ohga, Yasuyo; Shimpou, Akira; Abe, Yoshimoto; Suga, Sadaharu; Arakawa, Hironori (Photoreaction Control Research Center (PCRC), National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba Ibaraki, 305-8565, Japan). Journal of Physical Chemistry B, 106(6), 1363-1371 (English) 2002. CODEN: JPCBFK. ISSN: 1089-5647. Publisher: American Chemical Society.

AB The photoelectrochem. properties of nanoporous TiO<sub>2</sub> electrodes was studied using a series of benzothiazole merocyanine dyes, 3-carboxyalkyl-5-[2-(3-alkyl-2-benzothiazolinyldene)ethylidene]-2-thioxo-4-thiazolidinone, with different alkyl chain lengths, as photosensitizers. Broadening of the absorption spectra and a large red shift of the absorption threshold up to 680 nm were obsd. by adsorbing the dyes on a porous TiO<sub>2</sub> electrode, suggesting the formation of various kinds of J-aggregates of the dye on the TiO<sub>2</sub> surface. The dye was fixed by a chelate-like linkage of the carboxylate anchoring group on the TiO<sub>2</sub> surface, rather than by an ester linkage. The **solar** light-to-power conversion efficiency,  $\eta_{\text{sun}}$ , and the incident photon-to-current conversion efficiency (IPCE) increased with increasing length of the alkyl chain attached to the benzothiazole ring. The max.  $\eta_{\text{sun}}$  value was 4.5%, which is the second highest value among org. dye systems reported so far (AM-1.5, 100 mW/cm<sup>2</sup>). The J aggregates of the dyes having long alkyl chains showed an excellent ability for sensitization on the TiO<sub>2</sub> electrode, whereas those having short alkyl chains hardly showed the sensitization esp. at a light wavelength ( $\lambda$ ) of >600 nm. The IPCE decreased significantly with increasing methylene length between the carboxyl anchoring group and the dye chromophore, i.e., the conjugated skeleton, suggesting that the distance between the chromophore and the TiO<sub>2</sub> surface affected the IPCE. Moreover, a formation of fine packing of the dye chromophores in the J-aggregate has proved to be important to obtain a high IPCE. The stability of the dye in a sealed **solar** cell was also tested under simulated **solar** light with an UV cut **filter**. The  $\eta_{\text{sun}}$  and the color of the dye remained unchanged for >750 h, and the total turnover no. of the dye for the photon-to-electron conversion was >1.6  $\times$  10<sup>6</sup> cycles, suggesting that the merocyanine dye itself is fundamentally stable during the photoreaction in this system without UV.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 28, 41, 74

ST benzothiazole merocyanine dye titania **solar** cell; photosensitizer benzothiazole merocyanine dye **solar** cell;

- photoelec cell titania photosensitizer benzothiazole merocyanine dye
- IT **Cyanine dyes**  
(merocyanine, photosensitizers; photoelectrochem. properties of J-aggregates of benzothiazole merocyanine dyes on a nanostructured TiO<sub>2</sub> film)
- IT J-aggregates  
Photoelectric devices  
**Solar cells**  
(photoelectrochem. properties of J-aggregates of benzothiazole merocyanine dyes on a nanostructured TiO<sub>2</sub> film)
- L74 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN  
1976:82520 Document No. 84:82520 Photographic silver halide emulsion. Sato, Akira; Ikeda, Tadashi; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo (Fuji Photo Film Co., Ltd., Japan). Ger. Offen. DE 2065695 19751030, 13 pp. Division of Ger. Offen. 2,025,817. (German). CODEN: GWXXBX. APPLICATION: DE 1970-2065695 19700520.
- GI For diagram(s), see printed CA Issue.
- AB Photog. emulsions having a sensitization max. (S<sub>max</sub>.) at 620-50 mμ and a red sensitivity (S<sub>red</sub>) of >600 contain as the spectral sensitizer the **cyanine dye I** (R = Et, (CH<sub>2</sub>)<sub>3</sub>SO<sub>3</sub>H.Et<sub>3</sub>N; R<sub>1</sub> = Me, MeO). Thus, a gelatin-Ag(Br,I) emulsion (7 mole % AgI) contg. I (R = Et; R<sub>1</sub> = MeO) 0.08 mmole/kg of emulsion was coated on a cellulose acetate support, dried, exposed ( **sunlight**, 64 lx) through a red **filter** passing radiation >580 mμ, and developed in a Metol-hydroquinone developer to give a S<sub>max</sub>. of 650 mμ and S<sub>red</sub> of 610.
- IC G03C
- CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)  
Section cross-reference(s): 40
- ST **cyanine dye** sensitizer photog
- IT Photographic sensitizers  
(**cyanine dyes** as)

- L74 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN  
1963:47204 Document No. 58:47204 Original Reference No. 58:8071h,8072a-c Photographic sensitizer intermediates. (E. I. du Pont de Nemours & Co.). GB 903268 19620815, 9 pp. (Unavailable). PRIORITY: US 19590331.
- AB Quinaldinium, benzothiazolium, and methinecyanine methosulfates can be used in the prodn. of photog. dye images. 4-O<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>NH<sub>2</sub> (138 g.) is mixed with 138 g. HCl and 110 g. paraldehyde, the mixt. is cooled during the reaction, then heated on a steam bath for 1 h., dild. with 10 l. H<sub>2</sub>O, cooled, **filtered**, NaOAc added to the filtrate, and the solid material is **filtered** to give 40 g. 6-nitroquinaldine, m. 161-3°, which is refluxed for 2 h. with

180 g.  $\text{SnCl}_2$  and 200 mL.  $\text{HCl}$  to give 6-aminoquinaldine (I), m.  $188-9^\circ$  (ether). Methacryloyl chloride (11 g.) is added dropwise to 15.86 g. I below  $45^\circ$ , the mixt. is made alk. with  $\text{Na}_2\text{CO}_3$ , the white solid is **filtered**, suspended in  $\text{Na}_2\text{CO}_3$ , the mixt. heated to  $55^\circ$ , cooled, the product **filtered** dissolved in ether, dried, clarified, and the ether evapd. to give 11 g. white 6-methacrylamidoquinaldine, m.  $154-6^\circ$ , which is treated with  $\text{Me}_2\text{SO}_4$  at  $60^\circ$  to give 6-methacrylamido-1-methylquinaldinium methosulfate (II). Also prepd. are 2,3-dimethyl-5-methacrylamidobenzothiazolium methosulfate; [5-methacrylamido-3-methylbenzothiazole-(2)] [3-methyl- $\alpha$ -naphthothiazole-(2)]methinecyanine methosulfate,  $\lambda_{\text{max}}$ . 447  $\text{m}\mu$  ( $\text{EtOH-H}_2\text{O}$ ); [5-methacrylamido-3-methylbenzothiazole-(2)] [1-methylquinoline-(2)]methinecyanine methosulfate, m.  $290-5^\circ$  (decompn. and polymn.),  $\lambda_{\text{max}}$ . 487  $\text{m}\mu$  ( $\text{EtOH-H}_2\text{O}$ ); [5-methacrylamido-3 - methylbenzothiazole - (2)] [3 - methylbenzothiazole - (2)]methinecyanine methosulfate, m.  $280-5^\circ$  (decompn. and polymn.),  $\lambda_{\text{max}}$ . 420  $\text{m}\mu$ ; and bis[5-methacrylamido - 3 - methylbenzothiazole - (2)] - 2 - methyltrimethinecyanine methosulfate, green,  $\lambda_{\text{max}}$ . 552  $\text{m}\mu$  ( $\text{MeOH}$ ). A soln. (50 mL.) of 100 g. poly(vinyl alc.) in 500 mL.  $\text{H}_2\text{O}$  and 500 mL. 95%  $\text{EtOH}$ , 2 g. II, 2 g. 5,6-dimethoxy-1-methyl-2-(methylthio)benzothiazolium methosulfate, and 1 g. benzoin Me ether in 15 mL. 95%  $\text{EtOH}$  are stirred, white poster board is coated with the soln., the coated board dried at room temp. under subdued light, the board exposed to a 275 w. **sun**-lamp for 2 min. through a neg., developed with a 50% (by wt.)  $\text{EtOH}$  soln. of 28%  $\text{NH}_3$ , and a deep-red pos. image forms.

- CC 46 (Dyes)  
 IT Photographic couplers or Photographic color formers  
     (**cyanine dyes** contg. methacrylamido group)  
 IT Spectra, visible and ultraviolet  
     (of polymeric **cyanine dyes** contg.  
     methacrylamido group)  
 IT Methacrylamido group  
     (**cyanine dyes** contg., as polymerizable  
     photog.-color formers)

L74 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN

1945:8226 Document No. 39:8226 Original Reference No.

39:1293h-i,1294f-i Synthesis of **cyanine dyes** by the condensation of p-diethylaminobenzylaldehyde with appropriate heterocyclic compounds. I. Doja, M. Q.; Pandey, Muktddeo J. Indian Chem. Soc., 21, 83-6 (Unavailable) 1944.

AB Lepidine ethiodide (1.7 g.), 1 g. p-diethylaminobenzaldehyde (I) and 0.3 cc. piperidine dissolved in 30 cc. abs. alc. were refluxed for 2 hrs. to yield 1.6 g. 4-p-diethylaminostyrylquinoline ethiodide (II), brownish black, irregular earthy crystals ( $\text{MeOH}$ ), m.  $159^\circ$ .

Similarly, I (1 g.) and p-toluquinaldine ethiodide (1.7 g.) yield 2.5 g. 2-p-diethylaminostyryl-6-methylquinoline ethiodide (III), rust-red needles (MeOH), m. 221°; I (1 g.) and 1 g. 6-ethoxyquinaldine ethiodide give 2.4 g. 2-p-diethylaminostyryl-6-ethoxyquinoline ethiodide (IV), sage green, small glistening plates (MeOH), m. 218°. II, III and IV are sol. in water, CHCl<sub>3</sub>, alc. and insol. in ether. Wedge spectrograms show that II does not confer any extra sensitization on the photographic plate, while III is a powerful sensitizer, extending the zone of sensitization to  $\lambda = 6700 \text{ \AA}$ ., and IV is a weak sensitizer, the extra band of sensitization extending only to  $\lambda = 6300 \text{ \AA}$ . III is known commercially as "Sensitine P." II, III and IV dye silk and wool, and the shades are fairly resistant to **sunlight** and washing, but the shades on cotton are poor and easily removed. The characteristics of the wedge spectrograms of the above compds. are summarized in a table, as well as the color these dyes impart to wool, silk and cotton, and their cryst. properties and optical characteristics. II, III and IV required more HCl to become colorless in aq. than in alc. solns. and this difference goes hand in hand with the sensitizing power of the dye, the difference being largest with III, less for IV and still less for II. The color of the fluorescence, with Wallace color **filters**, is tabulated.

CC 25 (Dyes and Textile Chemistry)

IT **Dyes**

(**cyanine**, from p-diethylaminobenzaldehyde condensation with heterocyclic compds.)

IT Fluorescence

Spectra

(of **cyanine dyes**)

IT Photography

(sensitizers for, **cyanine dyes**)

L74 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2004 ACS on STN

1943:26405 Document No. 37:26405 Original Reference No. 37:4249e-i

The **cyanine dyes** of the pyridine series. III.

Doja, M. Q.; Prasad, Dhanusdhar J. Indian Chem. Soc., 19, 377-84 (Unavailable) 1942.

AB cf. C. A. 36, 6926.4. In an attempt to synthesize a powerful photographic sensitizer which can be used in the manuf. of panchromatic plates, the Me (I), Et (II), Pr (III) and Bu (IV) derivs. of 2-p-diethylaminostyrylpyridine alkyl iodide are prep'd. by refluxing p-diethylaminobenzaldehyde with the appropriate quaternary iodide of  $\alpha$ -picoline in abs. EtOH in the presence of piperidine in 80%, 75%, 67% and 76% yields, resp. I, flattened needles, m. 241°; is light mauve in reflected, ruby-red through transmitted light, has a strong scintillating light-blue reflex and shows deep-pink and nearly opaque pleochroism. II, thin

small felted needles, m. 205°, is vermillion-red in reflected, reddish orange through transmitted light, has a bluish white reflex and shows orange-yellow and rose pleochroism. III, fine long needles, m. 235°, is scarlet in reflected, deep rose-red through transmitted light, has a strong arc-blue reflex and shows rose-red and reddish black pleochroism. IV, tetragonal prisms, m. 244°, is reddish violet in reflected, claret red through transmitted light, has a strong shining violet reflex and orange-yellow and dull orange pleochroism. They are easily sol. in MeOH, EtOH, H<sub>2</sub>O and AcOH, slightly sol. in ligroin and insol. in ether, C<sub>6</sub>H<sub>6</sub> and CHCl<sub>3</sub>. The aq. and alc. solns. are orange-yellow in color. The relative intensity of transmitted light for equiv. solns. in EtOH is the same in both the dimethylamino and the diethylamino compds.: II > I > III > IV. Unlike certain other **cyanine dyes** (cf. Mills and Pope, C. A. 14, 2587), the aq. solns. of I-IV require much larger amts. of dil. acids for complete decolorization than their alc. solns. Silk and wool are dyed in orange shades, cotton in chocolate brown, the reddish tinge being deepened with increasing mol. wt. of the dye. None of the dyes are fast to **sunlight** or to soap washing. The sensitization spectra are detd. in solns. of 1:30,000 and 4 min. development. I has a total sensitization range of 4250 to 5650 Å. with a max. at 5350 and a min. at 5050, II from 4200 to 5750 with a max. at 5400 and a min. at 5000, III from 4250 to 5750 with a max. at 5500 and a min. at 5050, and IV from 4200 to 5800 with a max. at 5550 and a min. at 5000. In general, they are better sensitizers than the corresponding dimethylamino derivs. The fluorescent beams of solns. 1:50,000 in 90% EtOH have been detd. with Wallace color **filters** and are given in a table. II, when recrystd. from MeOH, EtOH, PrOH, BuOH and AmOH, gives chemically identical products without solvent of crystn. having the same m. p. but differing in their cryst. forms and optical properties which are listed in a table. II, recrystd. from BuOH, when moistened with H<sub>2</sub>O changes its deep vermillion color into light brick red and the original color does not return even after complete drying.

CC 25 (Dyes and Textile Chemistry)

IT **Dyes**

(**cyanine**, of pyridine series)

IT Photography

(**dyes** for, **cyanine**, of pyridine series)

IT Spectra

(of **cyanine dyes**)

IT Pleochroism

(of **cyanine dyes** of pyridine series)

=> d 175 5,10,15,20,25,30,35,40,45,50,55 cbib abs hitstr hitind



L75 ANSWER 5 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN  
2002:707087 Document No. 137:234058 Near-IR cutoff materials having  
near-IR-absorbing transparent coating layers and their manufacture.  
Marutsuka, Toshinori (Nisshin Spinning Co., Ltd., Japan). Jpn.  
Kokai Tokkyo Koho JP 2002264278 A2 20020918, 7 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 2001-71747 20010314.

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB The materials are manufd. by applying transparent coating materials  
contg. near-IR-absorption dyes and dyes with max absorption 550-620  
nm on transparent substrates, drying the coating layer under normal  
pressure to adjust residual solvent content  $\leq 3\%$ , and drying  
under reduced pressure to adjust the residual solvent content  
 $\geq 5$  ppm and  $< 500$  ppm. Thus, a coating compn. contg  
1,3-dioxolane 100, a dithiol-Ni complex I 0.07, a diiminium compd.  
II 0.2, a dithiol-Ni complex III 0.2, a cyanine deriv. IV 0.008, and  
a polycarbonate 18 parts was applied on a polyester film, dried at  
 $80^\circ$  for 5 min under normal pressure and then at  $50^\circ$   
for 25 min under reduced pressure ( $1.0 + 10^{-3}$  Pa) to give a  
near-IR cutoff film with residual solvent content 2.5% and 100 ppm  
at each drying step, showing improved thermal stability for a long  
period.

IC ICM B32B027-20  
ICS B32B007-02; G02B005-22

CC 42-2 (Coatings, Inks, and Related Products)  
Section cross-reference(s): 73

ST near IR cutoff coating residual solvent control; transparent coating  
near IR cutoff; dithiol nickel complex IR absorber coating;  
**cyanine dye** diiminium dithiol nickel complex  
coating

IT Coating process  
Cyanine dyes  
Drying  
Optical filters  
(manuf. of near-IR cutoff materials having near-IR-absorbing  
transparent coating layers with controlled residual solvent  
content for improved durability)

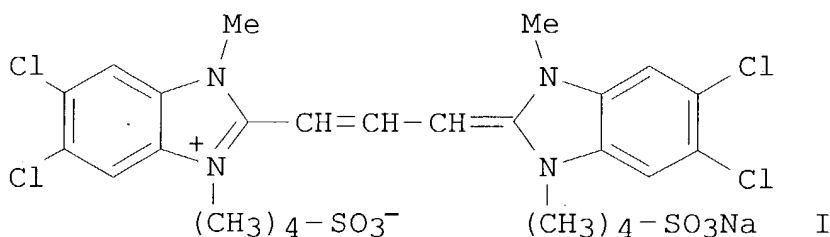
IT 220915-12-8  
(**cyanine dye**; manuf. of near-IR cutoff  
materials having near-IR-absorbing transparent coating layers  
with controlled residual solvent content for improved durability)

L75 ANSWER 10 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN

- 2002:176379 Document No. 136:239197 Electromagnetic wave-shielding transparent film for plasma display panel. Kubota, Tadahiko (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002072897 A2 20020312, 27 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-255860 20000825.
- AB The film involves a transparent support, an overcoating layer on 1 side of the support, and a pair of a metal oxide layer and a metal layer in this order on the overcoating layer wherein (a) the metal oxide layer and the metal layer are directly contacted or placed nearby, (b) the thickness of the overcoating layer is 0.05-5% of the support, and (c) the metal oxide layer is formed by sputtering under regulation of the amt. of O by plasma emission monitoring. The plasma display panel is that having the above film directly attached on the front surface of the panel or attached on the inside surface of a plate placed in front of the front surface of the panel. The display using the shield for reducing electromagnetic wave from the display surface, instead of a metal mesh, provides the image free from moire patterns.
- IC ICM G09F009-00  
ICS G09F009-00; B32B007-02; B32B009-00; G02B001-11; G02B001-10; G02B005-22; H05K009-00
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 75, 76, 77
- IT **Optical filters**  
(in electromagnetic wave-shielding transparent film involving metal layer and metal oxide layer for plasma display panel)
- IT **Cyanine dyes**  
(in **optical filter**; in electromagnetic wave-shielding transparent film involving metal layer and metal oxide layer for plasma display panel)
- IT 40531-42-8 391682-67-0  
(in **optical filter**; in electromagnetic wave-shielding transparent film involving metal layer and metal oxide layer for plasma display panel)
- L75 ANSWER 15 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN
- 2001:495321 Document No. 135:84433 Liquid crystal displays, their color filters, and pigmented photoimaging compositions therefor. Watanabe, Takuo; Akamatsu, Takayoshi; Eguchi, Yoshiichi (Toray Industries, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2001188120 A2 20010710, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-342 20000105.
- AB The compns., forming color filters with high contrast, contain  $\geq 30\%$  yellow pigments of sp. surface area  $\geq 70$  m<sup>2</sup>/g. The pigments may be chosen from quinophthalone, isoindoli(no)ne, Ni-azo complex, (azo)methine derivs.
- IC ICM G02B005-20

- ICS C09B067-20; G02F001-1335
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 38, 41, 73
- IT **Cyanine dyes**  
Liquid crystal displays  
**Optical filters**  
Surface area  
(photoimaging polyimide compns. contg. surface-area-regulated yellow pigments for high-contrast color filters)
- L75 ANSWER 20 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN  
2000:863711 Document No. 134:23618 **Optical filter**  
and antireflective film. Yabuki, Yoshiharu (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000338325 A2  
**20001208**, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION:  
JP 1999-152824 19990531.

GI



- AB The filter, with good durability of dye on substrates and useful for prepn. of image display devices, is prepd. by apply a binder contg. a dye which is absorbed on a microparticle on a transparent substrate. Thus, a filter was prepd. by adding aq. AgCl, NaCl and I in a polymer emulsion, coating at 30 mg/m<sup>2</sup> on a primer-coated and treated PET film, and drying for 10 min at 120°.
- IC ICM G02B005-22  
ICS C08K009-04; C08L101-16; C09D005-00; C09D007-12; G02B001-11
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST dye absorption silver chloride **optical filter**;  
PET antireflective film image display device; methine dye  
**optical filter** antireflective film
- IT Antireflective films  
**Cyanine dyes**  
**Optical filters**  
Optical imaging devices  
(**optical filter** and antireflective film)

- IT Polyesters, properties  
(**optical filter** and antireflective film)
- IT 25038-59-9, PET polymer, properties  
(**optical filter** and antireflective film)
- IT 142351-52-8 264602-35-9 309264-28-6  
(**optical filter** and antireflective film)
- L75 ANSWER 25 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN  
2000:278180 Document No. 132:300771 **Optical filter**  
. Harada, Toru; Yamada, Tsukasa; Suzuki, Ryuta; Yabuki, Yoshiharu;  
Nishigaki, Junji (Fuji Photo Film Co., Ltd., Japan). PCT Int. Appl.  
WO 2000023829 A1 **20000427**, 137 pp. DESIGNATED STATES: W:  
AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ,  
DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,  
JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN,  
MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR,  
TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU,  
TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI,  
FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG.  
(Japanese). CODEN: PIXXD2. APPLICATION: WO 1999-JP5785 19991020.  
PRIORITY: JP 1998-316876 19981020; JP 1999-42080 19990219; JP  
1999-121699 19990428; JP 1999-121700 19990428; JP 1999-124273  
19990430; JP 1999-234243 19990820.
- AB The invention relates to an **optical filter** that  
comprises a transparent support and a filter layer. The filter  
layer has an absorption peak in the wavelength range of 620 from 560  
nm, and the full width at half max. of the absorption peak ranges  
from 5 to 50 nm. This **optical filter** adequately  
absorbs undue light in an image display device (particularly, a  
plasma display panel).
- IC ICM G02B005-22  
ICS G02B001-11; H01J011-02; C09B023-00
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 74
- ST **optical filter** plasma display panel methine dye  
aggregate; **cyanine dye** color filter plasma  
display panel; oxonol dye **optical filter** plasma  
display panel
- IT Aggregates  
Cyanine dyes  
Optical filters  
Plasma display panels  
(**optical filter** for PDP)
- IT Gelatins, uses  
Polyesters, uses  
(**optical filter** for PDP)
- IT Dyes

(oxonol; **optical filter** for PDP)

IT 28272-54-0 64789-25-9 65756-91-4 85012-34-6 100479-13-8  
 116880-69-4 142351-52-8 264281-04-1 264602-35-9 264602-53-1  
 264607-36-5 264607-37-6 264608-51-7 264608-59-5 264608-60-8  
 264609-00-9 264609-01-0 264609-02-1 264609-03-2 264609-04-3  
 264624-36-4

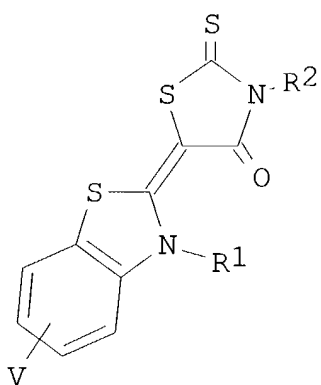
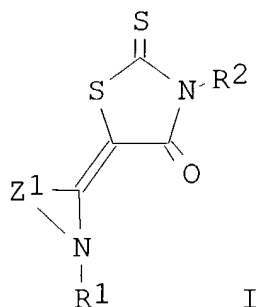
(**optical filter** for PDP)

IT 9003-55-8, Butadiene-styrene copolymer 9012-09-3,  
 Triacetylcellulose 25038-59-9, Polyethyleneterephthalate, uses  
 26124-53-8, Acrylic acid-methylacrylate-vinylidene chloride  
 copolymer 254887-33-7, Dpha-uv-6300b copolymer

(**optical filter** for PDP)

L75 ANSWER 30 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN  
 1997:250937 Document No. 126:257101 Preparation of rhodanine  
 derivatives as methine dyes. Ooya, Toyohisa (Fuji Photo Film Co  
 Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 09052884 A2 **19970225**  
 Heisei, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
 1995-204281 19950810.

GI



AB The title compds. [I; Z1 = 5-6 numbered N-contg. cyclyl; R1 = (un)substituted alkyl; R2 = (un)substituted alkyl, alkynyl, or alkenyl; X1 = ion; n = ion no.] are prepd. I are useful as dyes for photog. materials and cell coloring in medical research. Thus, rhodanine derivs. [II; V = 5-OMe, R1 = (CH<sub>2</sub>)<sub>4</sub>SO<sub>3</sub>, R2 = (CH<sub>2</sub>)<sub>2</sub>OH, (X1)<sub>n</sub> = N<sup>+</sup>HEt<sub>3</sub>] was refluxed with succinic anhydride in the presence of pyridine and Et<sub>3</sub>N in MeCN to give the title compd. II [V, R1, (X1)<sub>n</sub> = same as above, R2 = (CH<sub>2</sub>)<sub>2</sub>OCO(CH<sub>2</sub>)<sub>2</sub>CO<sub>2</sub>H], which was tested as dye for **optical filters**.

IC ICM C07D277-36

ICS C07D277-62; C07D277-84; C07D417-04; G02B005-22

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 28, 41

ST rhodanine prepn dye **optical filter**

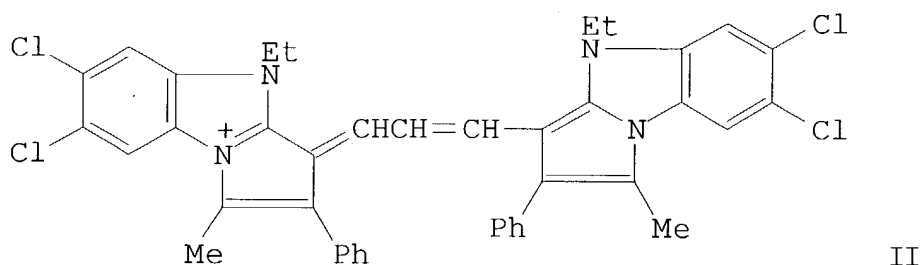
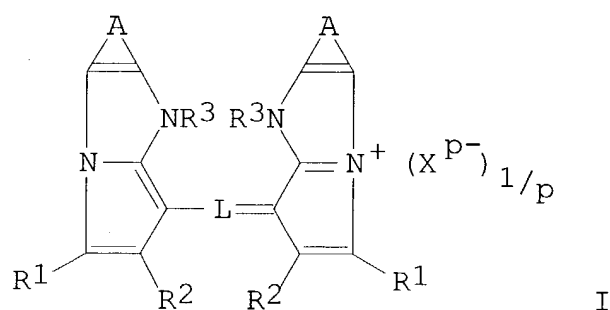
IT **Cyanine dyes**

**Optical filters**

(prepn. of rhodanine derivs. as dyes for **optical filters**)

L75 ANSWER 35 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN  
 1992:409827 Document No. 117:9827 Polymethine dyes for **optical filters**. Inagaki, Yoshio (Fuji Shashin Film K. K., Japan).  
 Jpn. Kokai Tokkyo Koho JP 04059874 A2 **19920226** Heisei, 9  
 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-172184  
 19900629.

GI



AB The dyes have the general structure I (A = group to complete benzene or naphthalene ring; R1, R2 = H, alkyl, Ph; R3 = alkyl, Ph; L = trivalent linking group of 1, 3, 5, or 7 methine groups in conjugated form; Xp- = anion; p = 1, 2, 3; the compds. may be in the form of inner salts). 6,7-Dichloro-4-ethyl-1-methyl-2-phenylpyrrolo[1,2-a]benzimidazole was prepd. from 5,6-dichloro-1-ethyl-2-methylbenzimidazole and  $\alpha$ -bromopropiophenone and treated with 1,3,3-trimethoxypropene in the presence of p-toluenesulfonic acid monohydrate to give II as the p-toluenesulfonate.

IC ICM C09B055-00

ICS C09B023-00

CC 41-6 (Dyes, Organic Pigments, Fluorescent Brighteners, and Photographic Sensitizers)

ST **optical filter** polymethine dye

IT **Dyes, cyanine**

- (manuf. of, for **optical filters**)
- IT **Optical filters**  
(polymethine dyes for)
- IT 141896-59-5P 141915-04-0P  
(dye, manuf. of, for **optical filters**)
- L75 ANSWER 40 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN  
1990:542426 Document No. 113:142426 Magenta filters. Elwood, James K.  
(Eastman Kodak Co., USA). U.S. US 4889410 A **19891226**, 10  
pp. (English). CODEN: USXXAM. APPLICATION: US 1988-240326  
19880906.
- AB In a color filter array comprising sets of differently colored  
filters, the magenta filters comprise an indolocarbo-cyanine dye in  
which the 3-position of each indole nucleus has  $\geq 1$  C3-12  
alkyl group attached which is unbranched at the 1st C atom. The  
filters exhibit improved light stability. The filters may be used  
in light-sensitive semiconductor devices, e.g., image sensors.
- IC ICM G02B005-22  
ICS G03C001-02
- NCL 350317000
- CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 73, 76
- ST image sensor **optical filter** array; magenta  
filter array indole **cyanine dye**; semiconductor  
device light sensitive
- IT **Optical filters**  
(arrays, magenta dye for)
- IT **Dyes, cyanine**  
(indole, for magenta filter array)
- L75 ANSWER 45 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN  
1988:501757 Document No. 109:101757 One-surface light-sensitive silver  
halide photographic material having controlled blue light  
sensitivity. Sakuma, Haruhiko; Taguchi, Masaaki (Konica Co.,  
Japan). Eur. Pat. Appl. EP 264788 A2 **19880427**, 55 pp.  
DESIGNATED STATES: R: DE, FR, GB, IT, NL. (English). CODEN:  
EPXXDW. APPLICATION: EP 1987-114965 19871013. PRIORITY: JP  
1986-246485 19861018; JP 1986-259644 19861031; JP 1987-131532  
19870529; JP 1987-131533 19870529.
- GI For diagram(s), see printed CA Issue.
- AB A 1-surface photog. material, having  $\geq 1$  green-sensitive  
layer, has the blue light sensitivity controlled to  $\leq 45\%$  of  
the green light sensitivity by using a sensitizing dye I or II: [R1,  
R2 = alkyl, alkenyl, aryl,  $\geq 1$  of R1 and R2 is sulfoalkyl or  
carboxyalkyl; R3 = H, C1-3 alkyl, aryl; X- = anion; Z1, Z2 = atoms  
necessary for forming (substituted) benzene ring; n = 1 or 2 (n = 1  
when intermol. salt is formed); R4, R6 = alkyl; R5, R7 = alkyl,



hydroxyalkyl, sulfoalkyl, carboxyalkyl; R8 = H, C1-3 alkyl], and optionally a filter dye. The photog. material has high sensitivity and excellent graininess and sharpness in cathode ray tube imaging and x-ray photog. Thus, a photog. film, prepd. by using anhydro-5,5'-dichloro-9-ethyl-3,3'-di(3-sulfopropyl)oxacarbocyanine oxide Na salt as the sensitizing dye, produced images with improved blue sensitivity and excellent graininess.

- IC ICM G03C005-02
- ICS G03C005-16; G03C001-12
- CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- ST film photog controlled blue sensitivity; benzoxazolium **cyanine dye** photog sensitizer; benzimidazolium **cyanine dye** photog sensitizer; radiog film sensitizer dye; cathode ray tube imaging filter
- IT Photographic sensitizers  
(benzimidazolium or benzoxazolium **cyanine dye** as)
- IT **Optical filters**  
(dye, photog. material contg.)
- IT Onium compounds  
(benzimidazolium, benzoxazolium or, **cyanine dye**, as photog. sensitizer)
- IT 91921-22-1 94266-02-1 116090-07-4 116090-09-6  
(**optical filter**, photog. material with controlled blue sensitivity using)

L75 ANSWER 50 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN

1977:131056 Document No. 86:131056 Sensitization of silver halide photographic emulsions. Hinata, Masanao; Takei, Haruo; Sato, Akira; Ikeda, Tadashi (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 51030724 **19760316** Showa, 21 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 1974-103726 19740909.

GI For diagram(s), see printed CA Issue.

AB Ag halide photog. emulsions contain  $\geq 1$  dye of a general structure I (Z = group of elements required to form a pyridine or quinoline ring; Z1 = group of elements required to form an oxazole, benzoxazole, naphthoxazole, imidazole, benzimidazole, or naphthoimidazole ring;  $\geq 1$  of R,R1 is an aliph. group having a carboxy or sulfo group, and the other can be an aliph. group) and  $\geq 1$  dye of a general structure II (Z2 = group of elements required to form a thiazole, benzothiazole, naphthothiazole, selenazole, benzoselenazole, or naphthoselenazole ring; Z3 = group of elements required to form an imidazole, benzimidazole, or naphthoimidazole ring;  $\geq 1$  of R2,R3 is an aliph. group with a carboxy or sulfo group, and the other can be an aliph. group) in amts. such that the 2 types of dyes exhibit a synergistic sensitizing effect. Thus, the dye III  $3.4 \times 10^{-5}$  and another

dye IV 3.4 + 10<sup>-5</sup> mol/mol Ag halide were added to a Ag(Br0.93,I0.07) emulsion (0.53 mol Ag halide/kg emulsion, gelatin/AgNO<sub>3</sub> wt. ratio = 1.3), coated on a cellulose triacetate film support, sensitometrically exposed at 64 lx for 1/50 s through a yellow **filter** and an **optical** wedge, and developed to give a relative sensitivity of 138 and a fog value of 0.11 vs. 100 and 0.10, resp., for a control without IV.

IC G03C001-28

CC 74-2 (Radiation Chemistry, Photochemistry, and Photographic Processes)

ST supersensitizer **cyanine dye** photog

IT Photographic sensitizers

(super-, **cyanine dye** mixts. as)

IT 62077-32-1 62337-08-0

(photog. supersensitizer from **cyanine dye** and)

L75 ANSWER 55 OF 55 HCAPLUS COPYRIGHT 2004 ACS on STN

1950:24500 Document No. 44:24500 Original Reference No.

44:4813d-i,4814a-b Improvements in the manufacture of N,N'-alkylenebenzimidazolecyanine dyes. Brooker, Leslie G. S. (Eastman Kodak Co.; Kodak Ltd.). GB 618889 **19490301** (Unavailable). APPLICATION: GB .

GI For diagram(s), see printed CA Issue.

AB N,N'-Alkylenecyanine dyes of the general formula (Ia), where R is an alkyl group, Z is substituted or unsubstituted o-phenylene group, X is an anion, and n is 2 or 3, may be prepd. by heating a bis[2-(1-alkyl)benzimidazolyl]methane with an ethylene or propylene diarylsulfonate and treating the resulting product with an acid binding agent, such as NaOH, or, where n = 1, substitute a methylene halide for the diarylsulfonate. Thus, 1,1'-diethyl-3,3'-ethylenebenzimidazolecyanine iodide (I) was prepd. by heating together at 110° 3 g. (1 mole) of bis(1-ethylbenzimidazolyl)methane (II) with 3.8 g. (1 mole) of ethylene di-p-toluenesulfonate (III) until vigorous reaction subsided, then heated at 165° for 1 hr. The cooled product was dissolved in EtOH and NaOH added. The pptd. ethylene **cyanine dye** was filtered off, washed with H<sub>2</sub>O and dissolved in hot EtOH, and to this soln. was added an EtOH soln. of 1.5 g. of NaI. When cool the sepd. ethylene cyanine iodide was filtered off and recryst. from EtOH to give tan crystals, m. about 325°. Its EtOH soln. had a strong blue fluorescence. Substitution of trimethylene di-p-toluenesulfonate for III gave 1,1'-diethyl-3,3'-trimethylbenzimidazolecyanine iodide. Substitution of bis(1-methylbenzimidazolyl)methane (IV) for II gave 1,1'-dimethyl-3,3'-ethylenebenzimidazolecyanine iodide. 1,1'-Diethyl-3,3'-methylenebenzimidazolecyanine iodide was prepd. by heating over a flame, 3 g. (1 mole) of II with 1.2 cc. (1 mole +

100% excess) of methylene iodide. When the cooled mass was dissolved in MeOH and made alk. with aq. NaOH, the methylenebenzimidazolecyanine iodide (0.75 g.) sepd. out; it was filtered off and recrystd. from EtOH giving pale yellow crystals, m. above 320°. Its EtOH soln. was nearly colorless with a strong blue fluorescence. 1,1'-Dimethyl-3,3'-methylenebenzimidazolecyanine results when IV is substituted for II. II was prepd. by refluxing for 2 hrs. a mixt. of 13.6 g. (2 mols.) of N-ethyl-o-phenylenediamine (V) and 8 g. (1 mol.) of Et malonate. The product recryst. from ligroin (b. 90-120°) shrank at 103° and m. 107-17°. IV was prepd. in a similar manner, substituting N-methyl-o-phenylenediamine for V. The dyes are useful as **optical filters** in photography.

CC 5 (Photography)

=> d his 197-

FILE 'HCAPLUS' ENTERED AT 18:22:50 ON 14 APR 2004

L97 124 S CYCL? (2A) CYANINE#  
L98 3 S L97 AND L54  
L99 31 S L97 AND (L93 OR L56)  
L100 0 S L97 AND L55  
L101 1 S L98 AND L99

FILE 'LCA' ENTERED AT 18:32:34 ON 14 APR 2004

L102 3311 S (COLOR? OR COLOUR? OR PIGMENT? OR DYE? OR STAIN? OR PAI

FILE 'HCAPLUS' ENTERED AT 18:32:59 ON 14 APR 2004

L103 97 S L97(3A)L102  
L104 22 S L103 AND L93  
L105 8 S L103 AND L56  
L106 5 S L104 AND L105  
L107 8 S (L98 OR L101 OR L106) NOT (L92 OR L74)

=> d l107 1-8 cbib abs hitstr hitind

L107 ANSWER 1 OF 8 HCAPLUS COPYRIGHT 2004 ACS on STN

2003:850695 Document No. 140:110966 Studies of solvation in homogeneous and heterogeneous media by electronic spectroscopic method. Shannigrahi, Mrinmoy; Pramanik, Ramkrishna; Bagchi, Sanjib (Department of Chemistry, Burdwan University, Burdwan, 713104, India). Spectrochimica Acta, Part A: Molecular and Biomolecular Spectroscopy, 59A(13), 2921-2933 (English) 2003. CODEN: SAMCAS. ISSN: 1386-1425. Publisher: Elsevier Science B.V..

AB Solvation characteristics in homogeneous (pure and mixed binary solvents) and heterogeneous media (aq. micelles,  $\beta$ - and

$\gamma$ -cyclodextrin solns.) have been studied by monitoring the emission characteristics of a newly synthesized dye. The longest **wavelength** absorption and emission band of the dye arise due to transition between S0 and S1 state. The max. energy of electronic transition involving intramol. charge transfer is found to be dependent on both the hydrogen-bond donating ability and the polarity-polarizability in pure solvent. The dipole moment in the S1 state, as detd. by solvatochromic procedure, agrees well with the value obtained by theor. calcn. at the AM1 level. Preferential solvation of the dye by alcs. has been found to occur in water binary mixts. with ethanol, 1- or 2-propanol. In aq. micellar media the dye mol. is located at the water-micelle interface. The binding const. for the dye-micelle interaction has also been detd. The results have been compared with those for a structurally related sym. keto-cyanine dye.

- CC 22-9 (Physical Organic Chemistry)  
 Section cross-reference(s): 46, 65, 66, 68, 69, 73
- ST cyanine dye solvation alc cyclodextrin aq micelle **UV**  
 spectroscopy; AM1 MO calcd parameter cyanine dye
- IT Luminescence  
 (Stokes' law; solvation of cyanine dyes in homogeneous and heterogeneous media by **UV** spectroscopy)
- IT Formation constant  
 Micelles  
 (cyanine dye-micelle interaction solvation in homogeneous and heterogeneous media by **UV** spectroscopy)
- IT **Optical** transition  
 (energy of; AM1 MO calcd. parameters of cyanine dyes)
- IT Solvents  
 (org.; solvation of cyanine dyes in homogeneous and heterogeneous media by **UV** spectroscopy)
- IT Solvatochromism  
 Surfactants  
 (solvation of cyanine dyes in homogeneous and heterogeneous media by **UV** spectroscopy)
- IT Hydrogen bond  
 Polarity  
 Polarizability  
**UV** and visible spectra  
 (synthesis of cyanine dyes and their solvatochromism in homogeneous and heterogeneous media)
- IT 64-17-5, Ethanol, properties 64-17-5D, Ethanol, glass 64-19-7,  
 Acetic acid, properties 67-63-0, 2-Propanol, properties 67-64-1,  
 Acetone, properties 71-23-8, 1-Propanol, properties 71-43-2,  
 Benzene, properties 75-05-8, Acetonitrile, properties 75-09-2,  
 Dichloromethane, properties 75-89-8, 2,2,2-Trifluoroethanol  
 96-47-9, 2-Methyltetrahydrofuran 96-47-9D, 2-  
 Methyltetrahydrofuran, glass 108-88-3D, Toluene, glass 109-99-9,

THF, properties 110-54-3, Hexane, properties 141-78-6, Ethyl acetate, properties 7585-39-9,  $\beta$ - **Cyclodextrin** 17465-86-0,  $\gamma$ - **Cyclodextrin** 63285-01-8 (synthesis of **cyanine dyes** and their solvatochromism in homogeneous and heterogeneous media)

- L107 ANSWER 2 OF 8 HCAPLUS COPYRIGHT 2004 ACS on STN  
2001:47840 Document No. 134:273402 Study of dye-sensitized systems for photoimaging. Gao, Fang; Zhao, Chun-Ying; Yang, Yong-Yuan; Li, Li-Dong (Institute of Photographic Chemistry, Chinese Academy of Sciences, Beijing, 100101, Peop. Rep. China). Chinese Journal of Polymer Science, 19(1), 79-83 (English) 2001. CODEN: CJPSEG. ISSN: 0256-7679. Publisher: Springer-Verlag.
- AB O-Chlorohexaarylbiimidazole (o-Cl-HABI) can be sensitized efficiently by **cyanine dyes**, the **cyclopentanone**- and cyclohexanone dyes, when exposed to xenon lamp (use **filter** cut  $\lambda \leq 400$  nm). The photoreaction between the photoinitiator and the dyes was completed through an electron-transfer process. Excellent results have been obtained in photoimaging studies, e.g. the resoln. of the image can reach 7  $\mu$ m. The influence of the content of the dyes and the heat after the exposure on the resoln. of the image was investigated.
- CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- L107 ANSWER 3 OF 8 HCAPLUS COPYRIGHT 2004 ACS on STN  
1996:241214 Document No. 124:330851 Development of new dyes for use in integrated **optical** sensors. Citterio, Daniel; Rasonyi, Stefan; Spichiger, Ursula E. (Zentrum Chem. Sensoren/Biosensoren bioAnalytische Chem., Eidgenoessische Tech. Hochschule (ETH), Zurich, CH-8005, Switz.). Fresenius' Journal of Analytical Chemistry, 354(7-8), 836-40 (English) 1996. CODEN: FJACES. ISSN: 0937-0633. Publisher: Springer.
- AB New chromoionophores were developed, focused on NIR applications so that optode membranes may be used in monolithically integrated **optical** sensors. The **wavelength** of max. absorbance was estd. for a new model compd. by the PPP method. Several cyanine type dyes were tested as membrane chromoionophores. Membrane compn. was altered to overcome soly. problems. In this way, simple pH-sensitive optode membranes were produced.
- CC 79-2 (Inorganic Analytical Chemistry)
- ST development dye integrated **optical** sensor
- IT Dyes, cyanine  
(cyanine dyes as membrane chromoionophores in integrated **optical** sensors)
- IT Ionophores  
(chromo-, cyanine dyes as membrane chromoionophores in integrated **optical** sensors)

## IT Sensors

(**optical**, cyanine dyes as membrane chromoionophores in integrated **optical** sensors)

IT 3599-32-4, IR 125 19764-96-6, 2-[7'-(1'',3'',3''-Trimethylindoline-2''-ylidene)-1',3',5'-heptatriene-1'-yl]-1,3,3-trimethyl-3H-indolium iodide 76438-58-9, 1,5-Bis[4-(dimethylamino)phenyl]-pentadienylium perchlorate 137008-57-2 148357-77-1, 2-(2,2-Diethyl-2,3-dihydro-1H-perimidine-6-yl)-4-(2,2-diethyl-1,2-dihydro-6H-perimidine-6-ylidene)-3-hydroxy-2-**cyclobutene**-1-one

(**cyanine dyes** as membrane chromoionophores in integrated **optical** sensors)

L107 ANSWER 4 OF 8 HCAPLUS COPYRIGHT 2004 ACS on STN

1984:560829 Document No. 101:160829 A new family of lasing dyes from an old family of fluors. Piechowski, A. P.; Bird, G. R. (Chem. Dep., Rutgers, State Univ. New Jersey, New Brunswick, NJ, 08903, USA). Optics Communications, 50(6), 386-92 (English) 1984. CODEN: OPCOB8. ISSN: 0030-4018.

AB The development is reported of a new series of laser dyes and the performance of these materials is discussed. Most of the dipole strength of the dye transition is concd. in the 0-0 band, where lasing cannot occur, and very little is concd. in the vibrational satellites 0-1 and 0-2 where lasing is possible. The new dyes are unsym. materials which may be considered as a hybrid of a rhodamine mol. and a fluorescein mol., and they are cyclized merocyanines. One dye in particular, 6-(dimethylamino)-9-o-carboxyphenylxanthen-3H-one, has been power output and time stability better than the preferred lasing dye Rhodamine 6G. The effects of dye structure and of acid-base transitions on lasing activity is discussed. The theory of band-shaping and the detailed **optical** parameters of the new dyes will be presented sep.

CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT **Dyes, cyanine**

(**cyclized** merocyanine, lasers)

## IT Fluorescence

**Ultraviolet** and visible spectra

(of cyclized merocyanine dyes)

IT 87188-94-1 92182-47-3 92278-99-4 92279-00-0 92279-01-1  
92279-02-2 92279-03-3 92279-04-4 92279-05-5  
(laser activity and **optical** properties of)

L107 ANSWER 5 OF 8 HCAPLUS COPYRIGHT 2004 ACS on STN

1982:405458 Document No. 97:5458 Correlated states in finite polyenes: exact PPP results. Ducasse, I. R.; Miller, T. E.; Soos, Z. G. (Dep. Chem., Princeton Univ., Princeton, NJ, 08544, USA). Journal of Chemical Physics, 76(8), 4094-104 (English) 1982. CODEN: JCPSA6. ISSN: 0021-9606.

- AB VB diagrams provide a convenient basis for correlated states in systems with one valence state per site. The exact PPP soln., including all CI, is presented for octatetraene (I), a cyanine dye, and various cyclic systems. The computer generation of symmetry adapted VB basis functions, of transformation coeffs. due to electron transfer, and of iterative solns. of sparse matrixes for any choice of spin-independent intersite interactions is rapid. The 2 1Ag state of I is correctly placed for std. Ohno parameters. The  $\pi$ -electron bond orders and charges of correlated states are contrasted to Hueckel and approx. PPP solns. The length dependence of the strong 1 1Ag $\rightarrow$ 1 1Bu transition is found for even chains and rings of up to N = 8 sites. Extrapolations as N $\rightarrow$  $\infty$  yield a limiting PPP gap around 3 eV, or about 1 eV above the absorption max. in polyacetylene, the nominally infinite polyene. The role of correlations in narrow-band org. solids and the extension of VB methods to larger systems are discussed.
- CC 22-2 (Physical Organic Chemistry)
- ST VB diagrammatic method correlated state; octotetraene VB diagram absorption; energy level excitation octatetraene; polyacetylene UV absorption; cyanine dye bond order; TTF TCNQ electron density
- IT Energy level, ground state  
(of octatetraene, pentadienyl anion, **cyanine dye**, or **cyclooctatetraene**, diagrammatic VB theory and)
- IT **Ultraviolet** and visible spectra  
(of pentadienyl anion, octatetraene, **cyclooctatetraene**, **cyanine dye** or polyacetylene, diagrammatic VB theory calcn. of)
- IT Unsaturated compounds  
(**optical** properties of infinite polyene, diagrammatic VB theory for)
- IT 53641-05-7  
(**UV** of, diagrammatic VB theory calcn. of)
- IT 35731-42-1  
(**UV** of, diagrammatic VB theory for calcn of)
- IT 629-20-9 25067-58-7 34484-44-1 34510-85-5  
(**optical** properties and Hubbard model for, diagrammatic VB theory and)
- IT 1871-50-7 1871-51-8 3725-31-3  
(**optical** properties and isomerization of, diagrammatic VB theory and)

L107 ANSWER 6 OF 8 HCAPLUS COPYRIGHT 2004 ACS on STN

1973:485543 Document No. 79:85543 Passive **optical** interrupter for giant pulsating lasers, allowing the formation of high-power luminous pulses. Doehne, Siegfried; Klose, Edgar (VEB Carl Zeiss). Fr. Demande FR 2140380 19730223, 13 pp. (French).

CODEN: FRXXBL. APPLICATION: FR 1972-13246 19720414.

AB High-power psec light pulses in the visible region were obtained by using 1,2- and 1,3-di-R-substituted cyclobutenediylum dyes for passive switching of a giant-pulse ruby laser. The preferred R groups are **cycloimmonium** groups (monomethine **cyanine dye** residues); also used were p-C<sub>6</sub>H<sub>4</sub>NMe- and N-contg. heterocyclic groups. The **wavelength** of the max. absorption depends both on the dye and on the solvent used. Absorption data for 8 dyes are given.

IC H01S; C09B; C09K

CC 73-6 (Spectra by Absorption, Emission, Reflection, or Magnetic Resonance, and Other Optical Properties)

IT Lasers

(**optical** switches for, from monomethinecyanine dye solns.)

IT 23475-86-7 30000-20-5 43134-04-9 43134-05-0 43134-06-1  
43134-07-2 43134-09-4 43134-10-7

(laser **optical** switching by solns. of)

L107 ANSWER 7 OF 8 HCAPLUS COPYRIGHT 2004 ACS on STN

1960:42866 Document No. 54:42866 Original Reference No.

54:8385g-i,8386a-b Cyanine dyes from thiazole derivatives.

Stevens, Geo. De (Sperry Rand Corp.). US 2916487 19591208

(Unavailable). APPLICATION: US .

AB Cyanine dyes for sensitizing photographic emulsions are prep'd. from the ethiodide (I) of 2-methyl-5,6,7,8-tetrahydro-4-cycloheptathiazole (II). Thus, a mixt. of 2-chlorocycloheptanone (Kotz, et al., C.A. 7, 37481) 10 and MeCSNH<sub>2</sub> 6 g. was heated slowly to 85°, chilled externally to control the temp. at 125°, held 10 min. at 125°, heated on the steambath for 1.5 hrs., chilled, treated with 10% HBr soln. 100 cc., and extd. with Et<sub>2</sub>O. The acid soln. was alkalized with NH<sub>4</sub>OH, the oil extd. with Et<sub>2</sub>O, dried over K<sub>2</sub>CO<sub>3</sub>, the Et<sub>2</sub>O evap'd., and the residue distd., giving II, b<sub>16</sub> 115-20° (36% yield). A mixt. of II 4.0 and EtI 4.0 g. was refluxed for 4 hrs., chilled, and washed with ether to give viscous I (70% yield). A soln. of I 1.8, (EtO)2CHCO<sub>2</sub>Me (III) 0.73, and Et<sub>3</sub>N 1.0 g. in pyridine 15 cc. was refluxed for 90 min., chilled, triturated with Et<sub>2</sub>O 400 cc., the reddish purple viscous residue was dissolved in Me<sub>2</sub>CO 5 cc., treated with H<sub>2</sub>O 10 cc., chilled, **filtered**, washed with H<sub>2</sub>O, and crystd. from cold Me<sub>2</sub>CO. The crude 3,3'-diethyl-5,5',6,6',7,7',8,8'-octahydro-4,4'-dicyclopentathiazolocarbocyanine iodide (10% yield) was crystd. twice from Me<sub>2</sub>CO (20 cc./g.) to give the pure dye (70% recovery), green crystals with bronze reflex, m. 208-10° (decompn.), reddish purple in MeOH, λ<sub>max</sub>. 566 mμ. A mixt. of I 1.0, 2-(2-acetanilidovinyl)benzoxazole ethiodide (IV) 1.32, Et<sub>3</sub>N 0.5 g. and, abs. alc. 10 cc. was refluxed for 10 min., chilled overnight, **filtered**, washed with H<sub>2</sub>O, then Me<sub>2</sub>CO, air



dried, and crystd. twice from MeOH (25 cc./g.), giving 3,3'-diethyl-5',6',7',8'-tetrahydro-4'-cycloheptaoxathiazolocarbocyanine iodide (13% yield), dark purple crystals with blue reflex, m. 236-8° (decomp.), orange-red in MeOH,  $\lambda_{\text{max}}$ . 516 m $\mu$ . Similarly, dyes were prepd. from I and the following components (purified yield, appearance, decompn. point, color in MeOH, and  $\lambda_{\text{max}}$ . in m $\mu$  given): 5-acetanilidomethylene-3-ethylrhodanine (V), 70%, shiny green needles, 190-2°, red, 550; 2-iodoquinoline ethiodide (VI), 65%, bright tiny red needles, 263-5°, yellowish orange, 476; 4-Me<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>CHO (VII), 11%, tiny orange needles, 238-40°, yellowish orange, 476.

CC 5 (Photography)

IT **Ultraviolet** and visible, spectra  
(of cyanine dyes)

IT 4,4'-Dicycloheptathiazolocarbocyanine iodide, 3,3'-diethyl-5,5',6,6',7,7',8,8'-octahydro-4-Cycloheptathiazole-2'-cyanine iodide, 1'-3-diethyl-5,6,7,8-tetrahydro-4H-Cycloheptathiazolium compounds, 2-(p-dimethylaminostyryl)-3-ethyl-5,6,7,8-tetrahydro-, iodide  
4H-Cycloheptathiazolium compounds, 3-ethyl-2-[(1-ethyl-2(1H)-quinolylidene)methyl]-5,6,7,8-tetrahydro-, iodide  
4H-Cycloheptathiazolium compounds, 3-ethyl-2-[3-(3-ethyl-3,4,5,6,7,8-hexahydro-2H-cycloheptathiazol-2-ylidene)propenyl]-5,6,7,8-tetrahydro-, iodide  
4H-Cycloheptathiazolium compounds, 3-ethyl-5,6,7,8-tetrahydro-2-methyl-, iodide  
Benzoxazolium compounds, 3-ethyl-2-[3-(3-ethyl-3,4,5,6,7,8-hexahydro-2H-cycloheptathiazol-2-ylidene)propenyl]-, iodide  
Oxa-4'-cycloheptathiazolocarbocyanine iodide, 3,3'-diethyl-5',6',7',8-tetrahydro-

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1948:31587 Document No. 42:31587 Original Reference No.

42:6685d-i,6686a-i,6687a-f,6688a-i,6689a-b,6690a-b Photographic elements containing 1,3,4-triazaindolizine cyanine dyes. Heimbach, Newton (General Aniline & Film Corp.). US 2443136 19480608 (Unavailable). APPLICATION: US .

GI For diagram(s), see printed CA Issue.

AB This patent relates to new asym. photosensitizing dyes contg. the 1,3,4-triazaindolizine nucleus, which when added to photographic Ag halide emulsions increase the sensitivity of the emulsion, and these dyes being H<sub>2</sub>O-sol. are easily removed from the exposed emulsion layer during processing. The 1,3,4-triazaindolizine bases (I) give rise to a series of cyanine dyes, which are good senzitizers for photographic emulsions. These bases have the following formula II, where R<sub>1</sub> represents an alkyl group, R<sub>2</sub> represents H, alkyl, carbalkoxy, aryl, and R<sub>3</sub> and R represent H, alkyl, and aryl as in

R<sub>2</sub>, aralkyl, alkoxyphenyl, and dialkoxyphenyl. The following 1,3,4-triazaindolizine derivs. are prep'd. by heating 3-amino-1,2,4-triazole with a  $\beta$ -diketone in abs. alc. in the presence of an org. base such as Et<sub>3</sub>N or piperidine: Compds. numbered 7, 8, and 15 are prep'd. by heating the same triazole with Et ethoxymethylene-acetoacetate in glacial AcOH. The bases represented by the above formula and prep'd. according to the above references and procedure are as follows: 5,7-di-Me; 5-methyl-7-phenyl (III); 5,7-dimethyl-2-phenyl (IV); 5,7-dimethyl-2-isopropyl (V); 5,7-dimethyl-2-propyl; 2,5,7-trimethyl (VI); 5,7-diethyl (VII); 5,7-dimethyl-6-phenyl; 5,7-diethyl-2-phenyl; 5,7-dimethyl-2-p-tolyl; 6-ethyl-5,7-dimethyl; 2,5,6,7-tetramethyl; 5,6,7-trimethyl; 2,5-dimethyl-7-phenyl; 5,7-dimethyl-2-(2-methoxyphenyl); 5-methyl-7-(4-methoxyphenyl); 5-methyl-7-(2,4-dimethoxyphenyl); 5-ethyl-7-(4-methoxyphenyl)-2-propyl (VIII); 5-methyl-7-p-tolyl (IX). The following 1,3,4-triazaindolizine derivs. are prep'd. by heating the corresponding triazole with Et (ethoxymethylene)acetoacetate or analogous ester in glacial AcOH: 6-carbethoxy-5-methyl; 6-carbethoxy-5,7-dimethyl; 6-carbomethoxy-5-methyl-2-phenyl. These I form alkyl or aralkyl quaternary salts (X) and undergo condensation with **cyclammonium** quaternary **cyanine** dye salt intermediates (XI) contg. a reactive group. The dyes derived from X and XI have the general formulas XII and XIIa where R<sub>1</sub> is alkyl or aralkyl, R, R<sub>2</sub>, and R<sub>3</sub> have the same values as given above, R<sub>4</sub> is H or alkyl, R<sub>5</sub> is H or Me, X represents an anionic acid radical, Z represents the atoms necessary to complete a nitrogenous heterocyclic system of the type usual in cyanine dyes, e.g., pyridine, and n represents a pos. integer ranging from 1 to 2. I are converted into IX by fusion with an alkyl or aralkyl halide or by heating the base with an alkyl or aralkyl halide in a sealed tube in a H<sub>2</sub>O bath under increased pressure. A mol. equiv. of IX is then heated with a mol. equiv. of X in the presence of a condensing agent such as a heterocyclic nitrogenous base or an alc. in the presence of a tertiary base at reflux temp. Concns. of condensing agent may vary from 1 to 25 mols., but 1 to 15 mols. are preferred. The following examples are given. V.EtI 3.45, 2-methylmercapto-6-methoxy-quinaldine-EtI 2.34 g., Et<sub>3</sub>N 2, and iso-PrOH 15 cc. are refluxed 1 hr. Upon cooling, XIII ppts. and is **filtered** and recrystd. from EtOH. XIII sensitizes a Ag bromiodide emulsion to 585 m $\mu$ , max. at 535 m $\mu$ . VIII.EtI 2.06 and 2-methylmercaptobenzothiazole-MeI 1.61 g. are dissolved in dry pyridine 10, the soln. refluxed 0.5 hr., piperidine 10 cc. added, and the mixt. heated 10 min. and cooled. The ppt. is recovered and recrystd. from EtOH. XIV sensitizes a Ag bromiodide emulsion to 590 m $\mu$ , max. at 540 m $\mu$ . III.EtI 3.65 and 2-[2-(N-acetylanilino)vinyl]benzothiazole-Et 3.04 g. are refluxed in 15 cc. dry pyridine 40 min., EtOH added to the cooled mixt., and, after

standing, the dye crystals **filtered** and recrystd. from EtOH. XV sensitizes a Ag bromiodide emulsion to 640 m $\mu$ , max. at 610 m $\mu$ . III.EtI 0.45, 2-(2-ethyl-2-methylmercaptovinyl)-6-methoxybenzothiazole-Et 0.39 g., iso-PrOH 15, and Et3N 0.2 cc. are refluxed 1 hr. Upon cooling, the dye ppts. and XVI is **filtered** and recrystd. from EtOH. XVI sensitizes a Ag bromiodide emulsion to 700 m $\mu$ , max. at 640 m $\mu$ . IV.EtI 3.79, 2-(4-ethoxy-1,3-butadienyl)benzothiazole-EtI 3.92 g., and dry pyridine 15 cc. are refluxed 50 min., EtOH added to the cooled mixt., and, after standing, the dye crystals are **filtered** and recrystd. from EtOH. XVII sensitizes a Ag bromiodide emulsion of 760 m $\mu$ , max. at 720 m $\mu$ . When 4.17 g. 2-(4-anilino-3-ethyl-1,3-butadienyl)benzoxazole-EtI was substituted for the benzothiazole compd., XVIII, sensitizing a Ag bromiodide emulsion to 720 m $\mu$ , with a max. at 680 m $\mu$ , was obtained. IX.EtI 3.79 and 2-(6-anilino-1,3,5-hexatrienyl)thiazoline-MeI 3.97 g. are mixed in 8 cc. dry pyridine, the mixt. refluxed 40 min., then chilled, and the dye crystals **filtered** and recrystd. from MeOH. XIX sensitizes a Ag bromiodide emulsion to 760 m $\mu$ , max. at 720 m $\mu$ . VI.EtI 3.17, 2-(6-anilino-4-ethyl-1,3,5-hexatrienyl)benzothiazole-EtI 4.48 g., and dry pyridine 12 cc. are refluxed 1 hr., EtOH added to the cooled mixt., and, upon standing, the dye crystals are **filtered** and recrystd. from EtOH. XX sensitizes a Ag bromiodide emulsion to 800 m $\mu$ , max. at 760 m $\mu$ . When 3.30 g. VII.Et was substituted for VI.EtI, XXI, sensitizing a Ag bromiodide emulsion to 790 m $\mu$ , with a max. at 750 m $\mu$ , was obtained. In the prepn. of photographic gelatino-Ag-developing-out emulsions, e.g., gelatino-AgCl, contg. mono- and polymethine dyes, it is only necessary to disperse the dyes in the emulsions. Compds. can be added from solns. in appropriate solvents, e.g., MeOH or EtOH, for the dyes. Emulsions are coated in the usual manner on a support such as cellulose nitrate, glass, paper, etc. Concn. of the dyes in the emulsion can vary from 5 to 100 mg./l. of flowable emulsions according to the type of light-sensitive material in the emulsion and to the desired effect. These dyes can be used in the manuf. of light **filters**, antihalation coatings, and in the coloring of cellulose acetate yarn (silk). This is due to the increased H<sub>2</sub>O soly. imparted to the dyes by the presence of the 1,3,4-triazaindolizine nucleus. These new mono- and polymethine 1,3,4-triazaindolizine cyanines and their use as sensitizing dyes may have numerous variations and modifications, e.g., by condensing a quaternary salt of a 1,3,4-triazaindolizine with a dialkylaminobenzene in the presence of a basic condensing agent, e.g., piperidine, styryl dyes are obtained. Cf. C.A. 42, 4078d.

CC 5 (Photography)